WORLDS OF TOMORROW

JUNE 1963 • 50¢

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by
MACK REYNOLDS

THE TOTALLY RICH
by
JOHN BRUNNER

THE STAR-SENT KNAVES
by KEITH LAUMER

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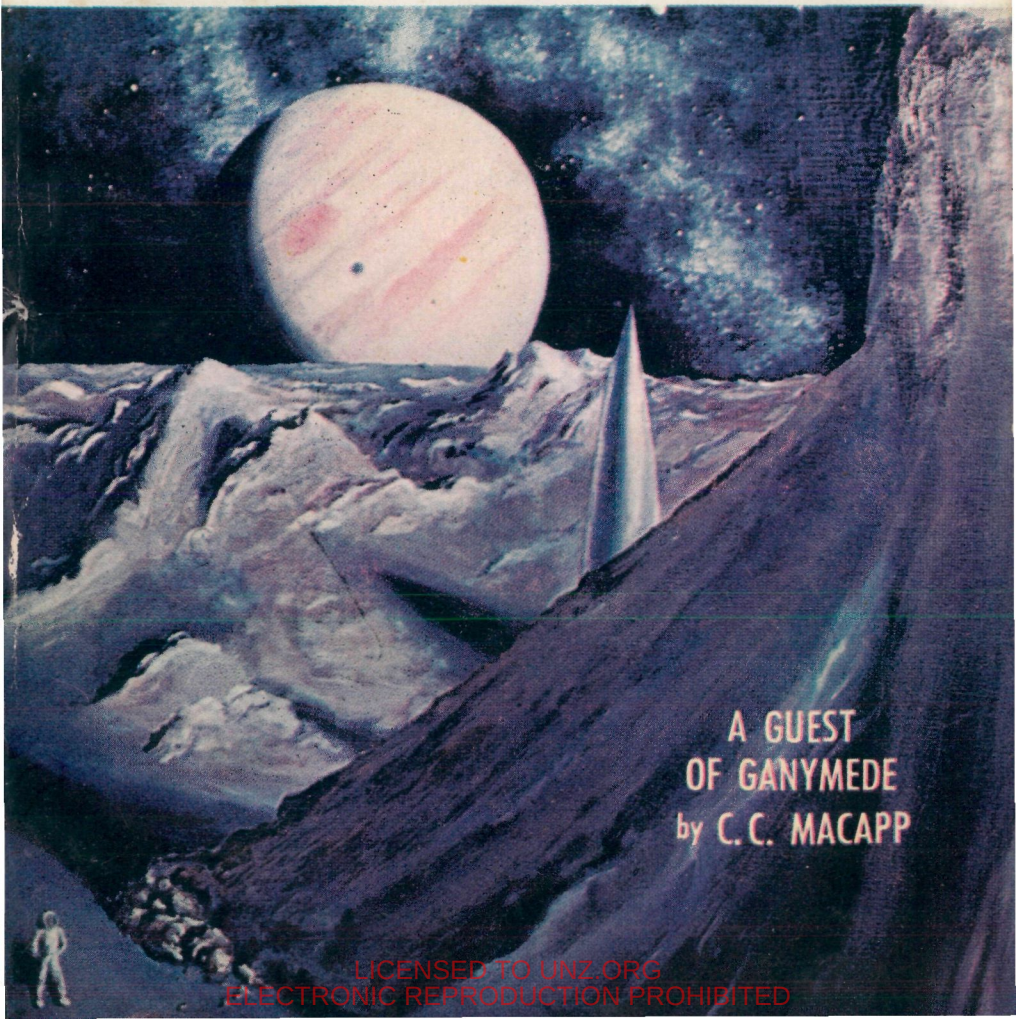

A GUEST OF GANYMEDE
by C. C. MACAPP

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WORLDS OF TOMORROW®

JUNE 1963

Vol. 1 No. 2

ALL NEW STORIES

FREDERIK POHL
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Cover From A GUEST OF GANYMEDE

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First of a series that brings you an up-to-the-minute view of The World of Tomorrow . . Today!

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NOW THAT TOMORROW'S HERE

As old science-fiction buffs we have seen a number of things translated from the stuff of science fiction into a part of our everyday environment—things on so broad a spectrum that it encompasses such diverse phenomena as broadcast television and the manipulation of genetic traits, spaceships and nuclear energy, and the synthesis of fabrics, medicines and foods.

Of course, this is a familiar story—it is the one thing about science fiction that people who know nothing about science fiction know—but although it is a twice-told tale, it is a fact. Science fiction has rather often been the first medium to call to the attention of the lay public some technological breakthrough that later on has become one of the things everybody takes as perfectly natural.

The question is, is it all over? Or are some of our wilder speculations perhaps close to coming true? What about faster-than-light travel, or time machines, or communication with an alien race? What about robots? What about eternal life?

With a little luck, and a good deal of work, it is just possible we will have something to say on some of these subjects in the near future, for with this issue of *Worlds of Tomorrow* we start what we intend to be a regular series of articles and essays on the general theme of "The World of Tomorrow . . . Today!"

Our finest entry is an abridgement from a book called *The Prospects of Immortality*, by R. C. W. Ettinger, which you will find beginning on page 54. One of the oldest and wildest of science-fiction predictions is that it may at some future date be possible to freeze and ultimately revive a dead man. In precisely that form, the prediction appeared some thirty years ago in a story called *The Jameson Satellite*, by Neil R. Jones. In this story Professor Jameson dies and, at his deathbed request, his body is thrust into orbit around the earth. At what Mr. Jones thought to be near-absolute-zero of space (it

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These great minds were Rosicrucians . . .

WHAT SECRET POWER DID THEY POSSESS?

Benjamin Franklin

Isaac Newton

Francis Bacon

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turns out not to be quite as cold as he imagined, but that's a detail), it remains undecayed for millions of years, until it is found by a star-wandering race of aliens. They revive Professor Jameson and implant his brain in a prosthetic metal body; and there after, as Zorome Machine-Man No. 21MM392, he roams the galaxy endlessly . . .

That's fantasy of course.

Of course?

Well, now read *The Prospects of Immortality* and see what Mr. Ettinger, a physical scientist and a Fellow of the National Science Foundation, has to say . . .

By the way, abridgement of this one book does not mean that we intend to go in for a diet of reprints. We don't. This book, which was privately published, with a very limited circulation, has heretofore been available only to something like one American in a million. If something as interesting, and as unlikely to have come to your attention elsewhere, turns up again, we may again be tempted to reprint it. But generally speaking our rule is, and remains, *No Reprints.*

Science-fiction readers must enjoy each other's company; at any rate, we see no other explanation for the number of clubs, regional conferences, conventions and other gatherings of the clan which seem to go on, year in and year out, all over the country and indeed all over the world.

If you've never found the opportunity to meet a representative sampling of other readers—not to mention editors, writers, artists, publishers and heaven knows what-all—your attention is invited to the following roundup of the principal large-scale events scheduled for the balance of this year in the United States. (We omit the rest of the world not out of chauvinism but because the regularly scheduled extraterritorial conventions are either already over—e.g., the English annual affair at Eastertime—or haven't been firmed up as to plans, e.g. further runnings of the conventions that have sometimes been held in Germany and in Japan.)

To begin with is the World Convention. "World" is a slightly ambitious term, but not totally without justification: although nine-tenths of the guests, at least, will usually be found to have come from one of the fifty states, there is generally a fair sprinkling from Canada, a lesser group from Latin America and an occasional visitor from Asia, Europe or Australia. (Neither Africa nor Antarctica has as yet been observed to send a delegation.) A regular feature for nearly 25 years, the World-Con has been held in over a dozen cities, all but two of them in the United States. Since the rules of the game provide for moving the location every year, and last year was Chicago's turn and the year before Seattle's, this year it will be held in Washington, D.C., on the first weekend in September. It runs three days, during which you have a chance to meet your favorite writers, editors, et al, as well as listen to what they have to say on a variety of panels and topical speeches.

The Guest of Honor this year is

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a fellow named Will F. Jenkins, better known as Murray Leinster, under which pseudonym he had the distinction of writing the first original story to be published in a science-fiction magazine in the world (in *Amazing Stories,* in 1926; not in the first issue, but those issues were made up of reprints) . . . and he still goes on doing it, and very well. If your plans include being around Washington, then, and your interests extend to visiting the convention, the way to arrange it is to write the DisCon Committee, P. O. Box 36, Mount Rainier, Maryland, for information.

Then there are the local conferences. Coming up almost at once is New York City's annual LUNACON. This will be the seventh running of this event, a one-day gathering of some 100 fans, writers and so on from the Metropolitan area, featuring an address by a Guest of Honor (in previous years the guests have been Willy Ley, Lester del Rey, etc.) and a variety of panels and other talks. The date is Sunday, April 21st, 1963; the place, Adelphi Hall, 74 Fifth Avenue, New York City; and the proceedings begin about 1 P.M.

Two months later, a pair of events occur on consecutive weekends, but about two thousand miles apart:

The MIDWESCON, on June 28th to June 30th, will be held this year in Cincinnati, Ohio, at the North Plaza Motel. The Midwesterners run an informal and usually delightfully relaxed gathering, to which they invite all interested parties. This is the fourteenth of the same; for information, you write to Donald E. Ford, Box 19-T, RR 1, Loveland, Ohio.

The WESTERCON takes in all the Pacific Coast territories of the U.S.A., which turns out to include an astonishing number of your favorite writers, many of whom show up each year. Kris Neville is the Guest of Honor in this sixteenth annual session, which will be held July 4th to 7th (yes, four long days!) at the Hyatt House in Burlingame, California, near the San Francisco airport. For further information: Ben Stark, 113 Ardmore Road, Berkeley 7, California.

In most years there is a DISCLAVE—that's to say, a DIStrict of Columbia ConCLAVE—in Washington, but as this year its space is occupied by the World Convention on Labor Day weekend, that leaves only:

The Philadelphia Science Fiction Conference, the date for which is still uncertain at this writing but will likely turn out to be the first weekend in November. In point of time the Philcon is the granddaddy of them all, since the first recorded conference took place in that city back in 1936. Such celebrated writers as Damon Knight, Theodore Sturgeon, H. Beam Piper and James Blish have been keynoters in past years; this year the committee has made the serious error of giving its principal speaking assignment to the editor of one of the science-fiction magazines. (This one, in fact.) For information: Tom Purdom, 1213 Spruce Street, Philadelphia 7, Pennsylvania.

That's the roster. Have a good time! *FREDERIK POHL*

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THE STAR-SENT KNAVES

BY KEITH LAUMER

Illustrated by Gaughan

When the Great Galactic Union first encounters Earth . . . is this what is going to happen?

Clyde W. Snithian was a bald eagle of a man, dark-eyed, pot-bellied, with the large, expressive hands of a rug merchant. Round-shouldered in a loose cloak, he blinked small reddish eyes at Dan Slane's travel-stained six foot one.

"Kelly here tells me you've been demanding to see me." He nodded toward the florid man at his side. He had a high, thin voice, like something that needed oiling. "Something about important information regarding safeguarding my paintings."

"That's right, Mr. Snithian," Dan said. "I believe I can be of great help to you."

"Help how? If you've got ideas of bilking me. . ." The red eyes bored into Dan like hot pokers.

"Nothing like that, sir. Now, I know you have quite a system of guards here — the papers are full of it —"

"Damned busybodies! Sensation-

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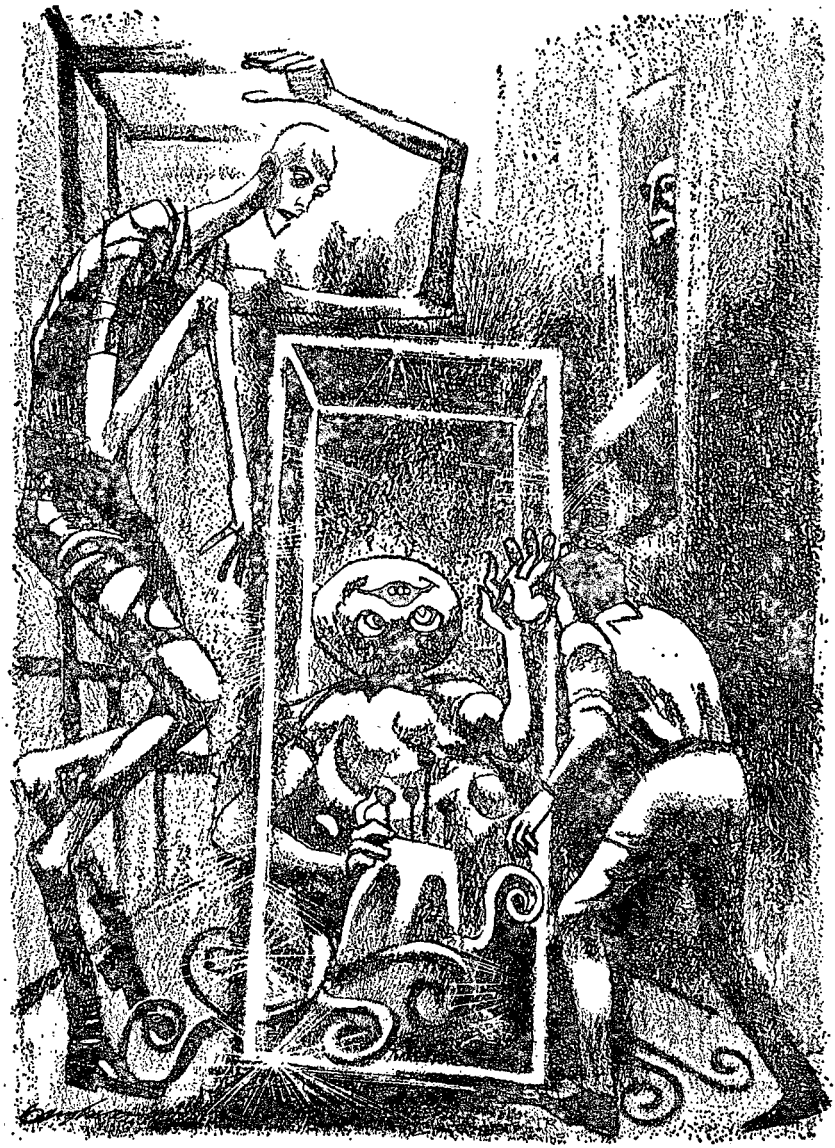

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mongers! If it wasn't for the press, I'd have no concern for my paintings today!"

"Yes sir. But my point is, the one really important spot has been left unguarded."

"Now, wait a minute —" Kelly started.

"What's that?" Snithian cut in.

"You have a hundred and fifty men guarding the house and grounds day and night—"

"Two hundred and twenty-five," Kelly snapped.

"— but no one at all in the vault with the paintings," Slane finished.

"Of course not," Snithian shrilled. "Why should I post a man in the vault? It's under constant surveillance from the corridor outside."

"The Harriman paintings were removed from a locked vault," Dan said. "There was a special seal on the door. It wasn't broken."

"By the saints, he's right," Kelly exclaimed. "Maybe we ought to have a man in that vault."

"Another idiotic scheme to waste my money," Snithian snapped. "I've made you responsible for security here, Kelly! Let's have no more nonsense. And throw this nincompoop out!" Snithian turned and stalked away, his cloak flapping at his knees.

"I'll work cheap," Dan called after him as Kelly took his arm. "I'm an art lover."

"Never mind that," Kelly said, escorting Dan along the corridor. He turned in at an office and closed the door.

"Now, as the old buzzard said, I'm responsible for security here. If those pictures go, my job goes with them. Your vault idea's not bad. Just how cheap would you work?"

"A hundred dollars a week," Dan said promptly. "Plus expenses," he added.

Kelly nodded. "I'll fingerprint you and run a fast agency check. If you're clean, I'll put you on, starting tonight. But keep it quiet."

Dan looked around at the gray walls, with shelves stacked to the low ceiling with wrapped paintings. Two three-hundred-watt bulbs shed a white glare over the tile floor, a neat white refrigerator, a bunk, an arm-chair, a bookshelf and a small table set with paper plates, plastic utensils and a portable radio — all hastily installed at Kelly's order. Dan opened the refrigerator, looked over the stock of salami, liverwurst, cheese and beer. He opened a loaf of bread, built up a well-filled sandwich, keyed open a can of beer.

It wasn't fancy, but it would do. Phase one of the plan had gone off without a hitch.

Basically, his idea was simple. Art collections had been disappearing from closely guarded galleries and homes all over the world. It was obvious that no one could enter a locked vault, remove a stack of large canvases and leave, unnoticed by watchful guards — and leaving the locks undamaged.

Yet the paintings were gone. Someone had been in those vaults — someone who hadn't entered in the usual way.

Theory failed at that point; that

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left the experimental method. The Snithian collection was the largest west of the Mississippi. With such a target, the thieves were bound to show up. If Dan sat in the vault —day and night — waiting — he would see for himself how they operated.

He finished his sandwich, went to the shelves and pulled down one of the brown-paper bundles. Loosening the string binding the package, he slid a painting into view. It was a gaily colored view of an open-air cafe, with a group of men and women in gay-ninetyish costumes gathered at a table. He seemed to remember reading something about it in a magazine. It was a cheerful scene; Dan liked it. Still, it hardly seemed worth all the effort...

He went to the wall switch and turned off the lights. The orange glow of the filaments died, leaving only a faint illumination from the night-light over the door. When the thieves arrived, it might give him a momentary advantage if his eyes were adjusted to the dark. He groped his way to the bunk.

So far, so good, he reflected, stretching out. When they showed up, he'd have to handle everything just right. If he scared them off there'd be no second chance. He would have lost his crack at — whatever his discovery might mean to him.

But he was ready. Let them come.

Eight hours, three sandwiches and six beers later, Dan roused suddenly from a light doze and sat up on the cot. Between him and the crowded shelving, a palely luminous framework was materializing in mid-air.

The apparition was an open-work cage — about the size and shape of an out-house minus the sheathing, Dan estimated breathlessly. Two figures were visible within the structure, sitting stiffly in contoured chairs. They glowed, if anything, more brightly than the framework.

A faint sound cut into the stillness — a descending whine. The cage moved jerkily, settling toward the floor. Long blue sparks jumped, crackling, to span the closing gap; with a grate of metal the cage settled against the floor. The spectral men reached for ghostly switches...

The glow died.

Dan was aware of his heart thumping painfully under his ribs. His mouth was dry. This was the moment he'd been planning for, but now that it was here —

Never mind. He took a deep breath, ran over the speeches he had prepared for the occasion:

Greeting, visitors from the Future...

Hopelessly corny. What about: *Welcome to the Twentieth Century...*

No good; it lacked spontaneity. The men were rising, their backs to Dan, stepping out of the skeletal frame. In the dim light it now looked like nothing more than a rough frame built of steel pipe, with a cluster of levers in a console before the two seats. And the thieves looked ordinary enough: Two men in gray coveralls, one slender and

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balding, the other shorter and round-faced. Neither of them noticed Dan, sitting rigid on the cot. The thin man placed a lantern on the table, twiddled a knob. A warm light sprang up. The visitors looked at the stacked shelves.

"Looks like the old boy's been doing all right," the shorter man said. "Fathead's gonna be pleased."

"A very gratifying consignment," his companion said. "However, we'd best hurry, Manny. How much time have we left on this charge?"

"Plenty. Fifteen minutes anyway."

The thin man opened a package, glanced at a painting.

"Ah, magnificent. Almost the equal of Picasso in his puce-period."

Manny shuffled through the other pictures in the stack.

"Like always," he grumbled. "No nood dames. I like nood dames."

"Look at this, Manny! The textures alone —"

Manny looked. "Yeah, nice use of values," he conceded. "But I still prefer nood dames, Fiorello."

"And this!" Fiorello lifted the next painting. "Look at that gay play of rich browns!"

"I seen richer browns on Thirty-third Street," Manny said. "They was popular with the sparrows."

"Manny, sometimes I think your aspirations —"

"Whatta ya talkin? I use a roll-on." Manny, turning to place a painting in the cage, stopped dead as he caught sight of Dan. The painting clattered to the floor. Dan stood, cleared his throat. "Uh. . ."

"Oh-oh," Manny said. "A double-cross."

"I've — ah — been expecting you gentlemen," Dan said. "I —"

"I told you we couldn't trust no guy with nine fingers on each hand," Manny whispered hoarsely. He moved toward the cage. "Let's blow, Fiorello."

"Wait a minute," Dan said. "Before you do anything hasty —"

"Don't start nothing, Buster," Manny said cautiously. "We're plenty tough guys when aroused."

"I want to talk to you," Dan insisted. "You see, these paintings —"

"Paintings? Look, it was all a mistake. Like, we figured this was the gent's room —"

"Never mind, Manny," Fiorello cut in. "It appears there's been a leak."

Dan shook his head. "No leak. I simply deduced —"

"Look, Fiorello," Manny said. "You chin if you want to; I'm doing a fast fade."

"Don't act hastily, Manny. You know where you'll end."

"Wait a minute!" Dan shouted. "I'd like to make a deal with you fellows."

"Ah-hah!" Kelly's voice blared from somewhere. "I knew it! Slane, you crook!"

Dan looked about wildly. The voice seemed to be issuing from a speaker. It appeared Kelly hedged his bets.

"Mr. Kelly, I can explain everything!" Dan called. He turned back to Fiorello. "Listen, I figured out —"

"Pretty clever!" Kelly's voice barked. "Inside job. But it takes more than the likes of you to out-

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fox an old-timer like Eddie Kelly."

"Perhaps you were right, Manny," Fiorello said. "Complications are arising. We'd best depart with all deliberate haste." He edged toward the cage.

"What about this ginzo?" Manny jerked a thumb toward Dan. "He's on to us."

"Can't be helped."

"Look —I want to go with you!" Dan shouted.

"I'll bet you do!" Kelly's voice roared. "One more minute and I'll have the door open and collar the lot of you! Came up through a tunnel, did you?"

"You can't go, my dear fellow," Fiorello said. "Room for two, no more."

Dan whirled to the cot, grabbed up the pistol Kelly had supplied. He aimed it at Manny. "You stay here, Manny! I'm going with Fiorello in the time machine."

"Are you nuts?" Manny demanded.

"I'm flattered, dear boy," Fiorello said, "but —"

"Let's get moving. Kelly will have that lock open in a minute."

"You can't leave me here!" Manny spluttered, watching Dan crowd into the cage beside Fiorello.

"We'll send for you," Dan said. "Let's go, Fiorello."

The balding man snatched suddenly for the gun. Dan wrestled with him. The pistol fell, bounced on the floor of the cage, skidded into the far corner of the vault. Manny charged, reaching for Dan as he twisted aside; Fiorello's elbow caught him in the mouth. Manny staggered back into the arms of Kelly, bursting red-faced into the vault.

"Manny!" Fiorello released his grip on Dan, lunged to aid his companion. Kelly passed Manny to one of three cops crowding in on his heels. Dan clung to the framework as Fiorello grappled with Kelly. A cop pushed past them, spotted Dan, moved in briskly for the pinch. Dan grabbed a lever at random and pulled.

Sudden silence fell as the walls of the room glowed blue. A spectral Kelly capered before the cage, fluorescing in the blue-violet. Dan swallowed hard and nudged a second lever. The cage sank like an elevator into the floor, vivid blue washing up its sides.

Hastily he reversed the control. Operating a time machine was tricky business. One little slip, and the Slane molecules would be squeezing in among brick and mortar particles...

But this was no time to be cautious. Things hadn't turned out just the way he'd planned, but after all, this was what he'd wanted — in a way. The time machine was his to command. And if he gave up now and crawled back into the vault, Kelly would gather him in and pin every art theft of the past decade on him.

It couldn't be *too* hard. He'd take it slowly, figure out the controls...

Dan took a deep breath and tried another lever. The cage rose gently, in eerie silence. It reached the ceiling and kept going.

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Dan gritted his teeth as an eight-inch band of luminescence passed down the cage. Then he was emerging into a spacious kitchen. A blue-haloed cook waddled to a luminous refrigerator, caught sight of Dan rising slowly from the floor, stumbled back, mouth open. The cage rose, penetrated a second ceiling. Dan looked around at a carpeted hall.

Cautiously he neutralized the control lever. The cage came to rest an inch above the floor. As far as Dan could tell, he hadn't traveled so much as a minute into the past or future.

He looked over the controls. There should be one labeled "Forward" and another labeled "Back", but all the levers were plain, unadorned black. They looked, Dan decided, like ordinary circuit-breaker type knife-switches. In fact, the whole apparatus had the appearance of something thrown together hastily from common materials. Still, it worked. So far he had only found the controls for maneuvering in the usual three dimensions, but the time switch was bound to be here somewhere...

Dan looked up at a movement at the far end of the hall.

A girl's head and shoulders appeared, coming up a spiral staircase. In another second she would see him, and give the alarm — and Dan needed a few moments of peace and quiet in which to figure out the controls. He moved a lever. The cage drifted smoothly sideways, sliced through the wall with a flurry of vivid blue light. Dan pushed the lever back. He was in a bedroom now, a wide chamber with flouncy curtains, a four-poster under a flowered canopy, a dressing table —

The door opened and the girl stepped into the room. She was young. Not over eighteen, Dan thought — as nearly as he could tell with the blue light playing around her face. She had long hair tied with a ribbon, and long legs, neatly curved. She wore shorts and carried a tennis racquet in her left hand and an apple in her right. Her back to Dan and the cage, she tossed the racquet on a table, took a bite of the apple, and began briskly unbuttoning her shirt.

Dan tried moving a lever. The cage edged toward the girl. Another; he rose gently. The girl tossed the shirt onto a chair and undid the zipper down the side of the shorts. Another lever; the cage shot toward the outer wall as the girl reached behind her back...

Dan blinked at the flash of blue and looked down. He was hovering twenty feet above a clipped lawn.

He looked at the levers. Wasn't it the first one in line that moved the cage ahead? He tried it, shot forward ten feet. Below, a man stepped out on the terrace, lit a cigarette, paused, started to turn his face up —

Dan jabbed at a lever. The cage shot back through the wall. He was in a plain room with a depression in the floor, a wide window with a planter filled with glowing blue plants —

The door opened. Even blue, the girl looked graceful as a deer as

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she took a last bite of the apple and stepped into the ten-foot-square sunken tub. Dan held his breath. The girl tossed the apple core aside, seemed to suddenly become aware of eyes on her, whirled —

With a sudden lurch that threw Dan against the steel bars, the cage shot through the wall into the open air and hurtled off with an accleration that kept him pinned, helpless. He groped for the controls, hauled at a lever. There was no change. The cage rushed on, rising higher. In the distance, Dan saw the skyline of a town, approaching with frightful speed. A tall office building reared up fifteen stories high. He was headed dead for it —

He covered his ears, braced himself —

With an abruptness that flung him against the opposite side of the cage, the machine braked, shot through the wall and slammed to a stop. Dan sank to the floor of the cage, breathing hard. There was a loud *click!* and the glow faded.

With a lunge, Dan scrambled out of the cage. He stood looking around at a simple brown-painted office, dimly lit by sunlight filtered through elaborate venetian blinds. There were posters on the wall, a potted plant by the door, a heap of framed paintings beside it, and at the far side of the room a desk. And behind the desk — Something.

II

Dan gaped at a head the size of a beachball, mounted on a torso like a hundred-gallon bag of water. Two large brown eyes blinked at him from points eight inches apart. Immense hands with too many fingers unfolded and reached to open a brown paper carton, dip in, then toss three peanuts, deliberately, one by one, into a gaping mouth that opened just above the brown eyes.

"Who're you?" a bass voice demanded from somewhere near the floor.

"I'm . . . I'm . . . Dan Slane . . . your honor."

"What happened to Manny and Fiorello?"

"They—I—There was this cop. Kelly—"

"Oh-oh." The brown eyes blinked deliberately. The many-fingered hands closed the peanut carton and tucked it into a drawer.

"Well, it was a sweet racket while it lasted," the basso voice said. "A pity to terminate so happy an enterprise. Still. . ." A noise like an amplified bronx cheer issued from the wide mouth.

"How . . . what . . .?"

"The carrier returns here automatically when the charge drops below a critical value," the voice said. "A necessary measure to discourage big ideas on the part of wisenheimers in my employ. May I ask how you happen to be aboard the carrier, by the way?"

"I just wanted — I mean, after I figured out — that is, the police. . . I went for help," Dan finished lamely.

"Help? Out of the picture, unfortunately. One must maintain one's anonymity, you'll appreciate. My

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operation here is under wraps at present. Ah, I don't suppose you brought any paintings?"

Dan shook his head. He was staring at the posters. His eyes, accustoming themselves to the gloom of the office, could now make out the vividly drawn outline of a creature resembling an alligator-headed giraffe rearing up above scarlet foliage. The next poster showed a face similar to the beachball behind the desk, with red circles painted around the eyes. The next was a view of a yellow volcano spouting fire into a black sky.

"Too bad." The words seemed to come from under the desk. Dan squinted, caught a glimpse of coiled purplish tentacles. He gulped and looked up to catch a brown eye upon him. Only one. The other seemed to be busily at work studying the ceiling.

"I hope," the voice said, "that you ain't harboring no reactionary racial prejudices."

"Gosh, no," Dan reassured the eye. "I'm crazy about — uh —"

"Vorplischers," the voice said. "From Vorplisch, or Vega, as you call it." The Bronx cheer sounded again. "How I long to glimpse once more my native fens! Wherever one wanders, there's no pad like home."

"That reminds me," Dan said. "I have to be running along now." He sidled toward the door.

"Stick around, Dan," the voice rumbled. "How about a drink? I can offer you Chateau Neuf du Pape, '59, Romance Conte, '32, goat's milk, Pepsi —"

"No, thanks."

"If you don't mind, I believe I'll have a Big Orange." The Vorplischer swiveled to a small refrigerator, removed an immense bottle fitted with a nipple and turned back to Dan. "Now, I got a proposition which may be of some interest to you. The loss of Manny and Fiorello is a serious blow, but we may yet recoup the situation. You made the scene at a most opportune time. What I got in mind is, with those two clowns out of the picture, a vacancy exists on my staff, which you might well fill. How does that grab you?"

"You mean you want me to take over operating the time machine?"

"Time machine?" The brown eyes blinked alternately. "I fear some confusion exists. I don't quite dig the significance of the term."

"That thing," Dan jabbed a thumb toward the cage. "The machine I came here in. You want me —"

"Time machine," the voice repeated. "Some sort of chronometer, perhaps?"

"Huh?"

"I pride myself on my command of the local idiom, yet I confess the implied concept snows me." The nine-fingered hands folded on the desk. The beachball head leaned forward interestedly. "Clue me, Dan. What's a time machine?"

"Well, it's what you use to travel through time."

The brown eyes blinked in agitated alternation. "Apparently I've loused up my investigation of the

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local cultural background. I had no idea you were capable of that sort of thing." The immense head leaned back, the wide mouth opening and closing rapidly. "And to think I've been spinning my wheels collecting primitive 2-D art!"

"But — don't you have a time machine? I mean, isn't that one?"

"That? That's merely a carrier. Now tell me more about your time machines. A fascinating concept! My superiors will be delighted at this development — and astonished as well. They regard this planet as Endsville."

"Your superiors?" Dan eyed the window; much too far to jump. Maybe he could reach the machine and try a getaway —

"I hope you're not thinking of leaving suddenly," the beachball said, following Dan's glance. One of the eighteen fingers touched a six-inch yellow cylinder lying on the desk. "Until the carrier is fueled, I'm afraid it's quite useless. But, to put you in the picture, I'd best introduce myself and explain my mission here. I'm Blote, Trader Fourth Class, in the employ of the Vegan Confederation. My job is to develop new sources of novelty items for the impulse-emporiums of the entire Secondary Quadrant."

"But the way Manny and Fiorello came sailing in through the wall! That *has* to be a time machine they were riding in. Nothing else could just materialize out of thin air like that."

"You seem to have a time-machine fixation, Dan," Blote said. "You shouldn't assume, just because you people have developed time travel, that everyone has. Now —" Blote's voice sank to a bass whisper — "I'll make a deal with you, Dan. You'll secure a small time machine in good condition for me. And in return —"

"*I'm* supposed to supply *you* with a time machine?"

Blote waggled a stubby forefinger at Dan. "I dislike pointing it out, Dan, but you are in a rather awkward position at the moment. Illegal entry, illegal possession of property, trespass — then doubtless some embarrassment exists back at the Snithian residence. I daresay Mr. Kelly would have a warm welcome for you. And, of course, I myself would deal rather harshly with any attempt on your part to take a powder." The Vegan flexed all eighteen fingers, drummed his tentacles under the desk, and rolled one eye, bugging the other at Dan.

"Whereas, on the other hand," Blote's bass voice went on, "you and me got the basis of a sweet deal. You supply the machine, and I fix you up with an abundance of the local medium of exchange. Equitable enough, I should say. What about it, Dan?"

"Ah, let me see," Dan temporized. "Time machine. Time machine —"

"Don't attempt to weasel on me, Dan," Blote rumbled ominously.

"I'd better look in the phone book," Dan suggested.

Silently, Blote produced a dog-eared directory. Dan opened it.

"Time, time. Let's see..." He brightened. "Time, Incorporated;

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local branch office. Two twenty-one Maple Street."

"A sales center?" Blote inquired. "Or a manufacturing complex?"

"Both," Dan said. "I'll just nip over and —"

"That won't be necessary, Dan," Blote said. "I'll accompany you." He took the directory, studied it.

"Remarkable! A common commodity, openly on sale, and I failed to notice it. Still, a ripe nut can fall from a small tree as well as from a large." He went to his desk, rummaged, came up with a handful of fuel cells. "Now, off to gather in the time machine." He took his place in the carrier, patted the seat beside him with a wide hand. "Come, Dan. Get a wiggle on."

Hesitantly, Dan moved to the carrier. The bluff was all right up to a point — but the point had just about been reached. He took his seat. Blote moved a lever. The familiar blue glow sprang up. "Kindly direct me, Dan," Blote demanded. "Two twenty-one Maple Street, I believe you said."

"I don't know the town very well," Dan said, "but Maple's over that way."

Blote worked levers. The carrier shot out into a ghostly afternoon sky. Faint outlines of buildings, like faded negatives, spread below. Dan looked around, spotted lettering on a square five-story structure.

"Over there," he said. Blote directed the machine as it swooped smoothly toward the flat roof Dan indicated.

"Better let me take over now," Dan suggested. "I want to be sure to get us to the right place."

"Very well, Dan."

Dan dropped the carrier through the roof, passed down through a dimly seen office. Blote twiddled a small knob. The scene around the cage grew even fainter. "Best we remain unnoticed," he explained.

The cage descended steadily. Dan peered out, searching for identifying landmarks. He leveled off at the second floor, cruised along a barely visible corridor. Blote's eyes rolled, studying the small chambers along both sides of the passage at once.

"Ah, this must be the assembly area," he exclaimed. "I see the machines employ a bar-type construction, not unlike our carriers."

"That's right," Dan said, staring through the haziness. "This is where they do time. . ." He tugged at a lever suddenly; the machine veered left, flickered through a barred door, came to a halt. Two nebulous figures loomed beside the cage. Dan cut the switch. If he'd guessed wrong —

The scene fluoresced, sparks crackling, then popped into sharp focus. Blote scrambled out, brown eyes swivelling to take in the concrete walls, the barred door and —

"You!" a hoarse voice bellowed.

"Grab him!" someone yelled.

Blote recoiled, threshing his ambulatory members in a fruitless attempt to regain the carrier as Manny and Fiorello closed in. Dan hauled at a lever. He caught a last glimpse of three struggling, blue-lit figures as the carrier shot away through the cell wall.

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III

Dan slumped back against the seat with a sigh. Now that he was in the clear, he would have to decide on his next move — fast. There was no telling what other resources Blote might have. He would have to hide the carrier, then —

A low growling was coming from somewhere, rising in pitch and volume. Dan sat up, alarmed. This was no time for a malfunction.

The sound rose higher, into a penetrating wail. There was no sign of mechanical trouble. The carrier glided on, swooping now over a nebulous landscape of trees and houses. Dan covered his ears again the deafening shriek, like all the police sirens in town blaring at once. If the carrier stopped it would be a long fall from here. Dan worked the controls, dropping toward the distant earth.

The noise seemed to lessen, descending the scale. Dan slowed, brought the carrier in to the corner of a wide park. He dropped the last few inches and cut the switch.

As the glow died, the siren faded into silence.

Dan stepped from the carrier and looked around. Whatever the noise was, it hadn't attracted any attention from the scattered pedestrians in the park. Perhaps it was some sort of burglar alarm. But if so, why hadn't it gone into action earlier? Dan took a deep breath. Sound or no sound, he would have to get back into the carrier and transfer it to a secluded spot where he could study it at leisure. He stepped back in, reached for the controls —

There was a sudden chill in the air. The bright surface of the dials before him frosted over. There was a loud *pop!* like a flashbulb exploding. Dan stared from the seat at an iridescent rectangle which hung suspended near the carrier. Its surface rippled, faded to blankness. In a swirl of frosty air, a tall figure dressed in a tight-fitting white uniform stepped through.

Dan gaped at the small rounded head, the dark-skinned long-nosed face, the long, muscular arms, the hands, their backs tufted with curly red-brown hair, the strange long-heeled feet in soft boots. A neat pillbox cap with a short visor was strapped low over the deep-set yellowish eyes, which turned in his direction. The wide mouth opened in a smile which showed square yellowish teeth.

"Alors, monsieur," the newcomer said, bending his knees and back in a quick bow. *"Vous ete une indigine, n'est ce pas?"*

"No compree," Dan choked out "Uh ... juh no parlay Fransay..."

"My error. This is the Anglic colonial sector, isn't it? Stupid of me. Permit me to introduce myself. I'm Dzhackoon, Field Agent of Class five, Inter-dimensional Monitor Service."

"That siren," Dan said. "Was that you?"

Dzhackoon nodded. "For a moment, it appeared you were disinclined to stop. I'm glad you decided to be reasonable."

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"What outfit did you say you were with?" Dan asked.

"The Inter-dimensional Monitor Service."

"Inter-what?"

"Dimensional. The word is imprecise, of course, but it's the best our language coder can do, using the Anglic vocabulary."

"What do you want with me?"

Dzhackoon smiling reprovingly. "You know the penalty for operation of an unauthorized reversed-phase vehicle in Interdicted territory. I'm afraid you'll have to come along with me to Headquarters."

"Wait a minute! You mean you're arresting me?"

"That's a harsh term, but I suppose it amounts to that."

"Look here, uh — Dzhackoon. I just wandered in off the street. I don't know anything about Interdicts and reversed-whozis vehicles. Just let me out of here."

Dzhackoon shook his head. "I'm afraid you'll have to tell it to the Inspector." He smiled amiably, gestured toward the shimmering rectangle through which he had arrived. From the edge, it was completely invisible. It looked, Dan thought, like a hole snipped in reality. He glanced at Dzhackoon. If he stepped in fast and threw a left to the head and followed up with a right to the short ribs —

"I'm armed, of course," the Agent said apologetically.

"Okay," Dan sighed. "But I'm going under protest."

"Don't be nervous," Dzhackoon said cheerfully. "Just step through quickly."

Dan edged up to the glimmering surface. He gritted his teeth, closed his eyes and took a step. There was a momentary sensation of searing heat...

His eyes flew open. He was in a long, narrow room with walls finished in bright green tile. Hot yellow light flooded down from the high ceiling. Along the wall, a series of cubicles were arranged. Tall, white-uniformed creatures moved briskly about. Nearby stood a group of short, immensely burly individuals in yellow. Lounging against the wall at the far end of the room, Dan glimpsed a round-shouldered figure in red, with great bushes of hair fringing a bright blue face. An arm even longer than Dzhackoon's wielded a toothpick on a row of great white fangs.

"This way," Dzhackoon said. Dan followed him to a cubicle, curious eyes following him. A creature indistinguishable from the Field Agent except for a twist of red braid on each wrist looked up from a desk.

"I've picked up that reversed-phase violator, Ghunt," Dzhackoon said. "Anglic Sector, Locus C 922A4."

Ghunt rose. "Let me see; Anglic Sector ... Oh, yes." He extended a hand. Dan took it gingerly; it was a strange hand — hot, dry and coarse-skinned, like a dog's paw. He pumped it twice and let it go.

"Wonderfully expressive," Ghunt said. "Empty hand, no weapon. The implied savagery..." He eyed Dan curiously.

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"Remarkable. I've studied your branch, of course, but I've never had the pleasure of actually seeing one of you chaps before. That skin; amazing. Ah . . . may I look at your hands?"

Dan extended a hand. The other took it in bony fingers, studied it, turned it over, examined the nails. Stepping closer, he peered at Dan's eyes and hair.

"Would you mind opening your mouth, please?" Dan complied. Ghunt clucked, eyeing the teeth. He walked around Dan, murmuring his wonderment.

"Uh . . . pardon my asking," Dan said, "but are you what — uh — people are going to look like in the future?"

"Eh?" The round yellowish eyes blinked; the wide mouth curved in a grin. "I doubt that very much, old chap." He chuckled. "Can't undo half a million years of divergent evolution, you know."

"You mean you're from the past?" Dan croaked.

"The past? I'm afraid I don't follow you."

"You don't mean — we're all going to die out and monkeys are going to take over?" Dan blurted.

"Monkeys? Let me see. I've heard of them. Some sort of small primate, like a miniature Anthropos. You have them at home, do you? Fascinating!" He shook his head regretfully. "I certainly wish regulations allowed me to pay your sector a visit."

"But you *are* time travelers," Dan insisted.

"Time travelers?" Ghunt laughed aloud.

"An exploded theory," Dzhackoon said. "Superstition."

"Then how did you get to the park from here?"

"A simple focused portal. Merely a matter of elementary stressed-field mechanics."

"That doesn't tell me much," Dan said. "Where am I? Who are you?"

"Explanations are in order, of course," Ghunt said. "Have a chair. Now, if I remember correctly, in your locus, there are only a few species of Anthropos extant —"

"Just the one," Dzhackoon put in. "These fellows look fragile, but oh, brother!"

"Oh, yes; I recall. This was the locus where the hairless variant systematically hunted down other varieties." He clucked at Dan reprovingly. "Don't you find it lonely?"

"Of course, there are a couple of rather curious retarded forms there," Dzhackoon said. "Actual living fossils; sub-intellectual Anthropos. There's one called the gorilla, and the chimpanzee, the orang-utan, the gibbon — and, of course, a whole spectrum of the miniature forms."

"I suppose that when the ferocious mutation established its supremacy, the others retreated to the less competitive ecological niches and expanded at that level," Ghunt mused. "Pity. I assume the gorilla and the others are degenerate forms?"

"Possibly."

"Excuse me," Dan said. "But about that explanation. . ."

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"Oh, sorry. Well, to begin with Dzhackoon and I are — ah — Australopithecines, I believe your term is. We're one of the many varieties of Anthropos native to normal loci. The workers in yellow, whom you may have noticed, are akin to your extinct Neanderthals. Then there are the Pekin derivatives — the blue-faced chaps — and the Rhodesians —"

"What are these loci you keep talking about? And how can cave men still be alive?"

Ghunt's eyes wandered past Dan. He jumped to his feet. "Ah, good day, Inspector!" Dan turned. A grizzled Australopithecine with a tangle of red braid at collar and wrists stared at him glumly.

"Harrumph!" the Inspector said. "Albinism and alopecia. Not catching, I hope?"

"A genetic deficiency, excellency," Dzhackoon said. "This is a Homo Sapiens, a naturally bald form from a rather curious locus."

"Sapiens? Sapiens? Now, that seems to ring a bell." The olster blinked at Dan. "You're not —" He waggled fingers in instinctive digital-mnemonic stimulus. Abruptly he stiffened. "Why, this is one of those fratricidal deviants!" He backed off. "He should be under restraint, Ghunt! Constable! Get a strong-arm squad in here! This creature is dangerous!"

"Inspector. I'm sure —" Ghunt started.

"That's an order!" the Inspector barked. He switched to an incomprehensible language, bellowed more commands. Several of the thickset Neanderthal types appeared, moving in to seize Dan's arms. He looked around at chinless, wide-mouthed brown faces with incongruous blue eyes and lank blond hair.

"What's this all about?" he demanded. "I want a lawyer!"

"Never mind that!" the Inspector shouted. "I know how to deal with miscreants of your stripe!" He stare distastefully at Dan. "Hairless! Putty-colored! Revolting! Planning more mayhem, are you? Preparing to branch out into the civilized loci to wipe out all competitive life, is that it?"

"I brought him here, Inspector," Dzhackoon put in. "It was a routine traffic violation."

"I'll decide what's routine here! Now, Sapiens! What fiendish scheme have you up your sleeve, eh?"

"Daniel Slane, civilian, social security number 456-7329-988," Dan said.

"Eh?"

"Name, rank and serial number," Dan explained. "I'm not answering any other questions."

"This means penal relocation, Sapiens! Unlawful departure from native locus, willful obstruction of justice —"

"You forgot being born without permission, and unauthorized breathing."

"Insolence!" the Inspector snarled. "I'm warning you, Sapiens, it's in my power to make things miserable for you. Now, how did you induce Agent Dzhackoon to bring you here?"

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"Well, a good fairy came and gave me three wishes —"

"Take him away," the Inspector screeched. "Sector 97; an unoccupied locus."

"Unoccupied? That seems pretty extreme, doesn't it?" one of the guards commented, wrinkling his heavily ridged brow.

"Unoccupied! If it bothers you, perhaps I can arrange for you to join him there!"

The Neanderthaloid guard yawned widely, showing white teeth. He nodded to Dan, motioned him ahead. "Don't mind Spoghodo," he said loudly. "He's getting old."

"Sorry about all this," a voice hissed near Dan's ear. Dzhackoon — or Ghunt, he couldn't say which — leaned near. "I'm afraid you'll have to go along to the penal area, but I'll try to straighten things out later."

Back in the concourse, Dan's guard escorted him past cubicles where busy IDMS agents reported to harassed seniors, through an archway into a room lined with narrow gray panels. It looked like a gym locker room.

"Ninety-seven," the guard said. He went to a wall chart, studied the fine print with the aid of a blunt, hairy finger, then set a dial on the wall. "Here we go," he said. He pushed a button beside one of the lockers. Its surfacc clouded and became iridescent.

"Just step through fast. Happy landings."

"Thanks," Dan ducked his head and pushed through the opening in a puff of frost.

He was standing on a steep hillside, looking down across a sweep of meadow to a plain far below. There were clumps of trees, and a river. In the distance a herd of animals grazed among low shrubbery. No road wound along the valley floor; no boats dotted the river; no village nestled at its bend. The far hills were innocent of trails, fences, houses, the rectangles of plowed acres. There were no contrails in the wide blue sky. No vagrant aroma of exhaust fumes, no mutter of internal combustion, no tin cans, no pop bottles —

In short, no people.

Dan turned. The Portal still shimmered faintly in the bright air. He thrust his head through, found himself staring into the locker room. The yellow-clad Neanderthaloid glanced at him.

"Say," Dan said, ignoring the sensation of a hot wire around his neck, "can't we talk this thing over?"

"Better get your head out of there before it shuts down," the guard said cheerfully. "Otherwise — ssskkkttt!"

"What about some reading matter? And look, I get these head colds. Does the temperature drop here at night? Any dangerous animals? What do I eat?"

"Here," the guard reached into a hopper, took out a handful of pamphlets. "These are supposed to be for guys that are relocated without prejudice. You know, poor slobs that just happened to see too much; but I'll let you have one. Let's see ... Anglic, Anglic..." He selected one, handed it to Dan.

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"Thanks."

"Better get clear."

Dan withdrew his head. He sat down on the grass and looked over the booklet. It was handsomely printed in gay colors. WELCOME TO RELOCATION CENTER NO. 23 said the cover. Below the heading was a photo of a group of sullen-looking creatures of varying heights and degrees of hairiness wearing paper hats. The caption read: *Newcomers Are Welcomed Into a Gay Round of Social Activity. Hi, Newcomer!*

Dan opened the book. A photo showed a scene identical to the one before him, except that in place of the meadow, there was a park-like expanse of lawn, dotted with rambling buildings with long porches lined with rockers. There were picnic tables under spreading trees, and beyond, on the river, a yacht basin crowded with canoes and rowboats.

"Life In a Community Center is Grand Fun!" Dan read. "Activities! Brownies, Cub Scouts, Boy Scouts, Girl Scouts, Sea Scouts, Tree Scouts, Cave Scouts, PTA, Shriners, Bear Cult, Rotary, Daughters of the Eastern Star, Mothers of the Big Banana, Dianetics — you name it! A Group for Everyone, and Everyone in a Group!

Classes in conversational Urdu, Sprotch, Yiddish, Gaelic, Fundu, etc; knot-tying, rug-hooking, leather-work, Greek Dancing, finger-painting and many, many others!

Little Theatre!

Indian Dance Pageants!

Round Table Discussions!

Town Meetings!

Dan thumbed on through the pages of emphatic print, stopped at a double-page spread labeled, *A Few Do's and Don'ts.*

* All of us want to make a GO of relocation. So — let's remember the Uranium Rule: Don't Do It! The Other Guy May Be Bigger!

* Remember the Other Fellow's Taboos!

What to you might be merely a wholesome picnic or mating bee may offend others. What some are used to doing in groups, others consider a solitary activity. Most taboos have to do with eating, sex, elimination or gods; so remember look before you sit down, lie down, squat down or kneel down!

* Ladies With Beards Please Note:

Friend husband may be on the crew clearing clogged drains — so watch that shedding in the lavatories, eh, girls? And you fellas, too! Sure, good grooming pays — but groom each other out in the open, okay?

* NOTE, There has been some agitation for separate but equal facilities. Now, honestly, folks; is that in the spirit of Center No. 23? Males and females ***will continue to use the same johns***

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as always. No sexual chauvinism will be tolerated.

* A Word To The Kiddies!

No brachiating will be permitted in the Social Center area. After all, a lot of the Dads sleep up there. There are plenty of other trees!

* Daintiness Pays!

In these more-active-than-ever days, Personal Effluvium can get away from us almost before we notice. And that hearty scent may not be as satisfying to others as it is to ourselves! So remember, fellas: watch that P. E.! (Lye soap, eau de Cologne, flea powder and other beauty aids available at supply shed!)

Dan tossed the book aside. There were worse things than solitude. It looked like a pretty nice world — and it was all his.

The entire North American continent, all of South America, Europe, Asia, Africa — the works. He could cut down trees, build a hut, furnish it. There'd be hunting — he could make a bow and arrows — and the skins would do to make clothes. He could start a little farming, fish the streams, sun bathe — all the things he'd never had time to do back home. It wouldn't be so bad. And eventually Dzhackoon would arrange for his release. It might be just the kind of vacation—

"Ah Dan, my boy!" a bass voice boomed. Dan jumped and spun around.

Blote's immense face blinked at him from the Portal. There was a large green bruise over one eye. He wagged a finger reproachfully.

"That was a dirty trick, Dan. My former employees were somewhat disgruntled, I'm sorry to say. But we'd best be off now. There's no time to waste."

"How did you get here?" Dan demanded.

"I employed a pocket signaler to recall my carrier — and none too soon." He touched his bruised eye gingerly. "A glance at the instruments showed me that you had visited the park. I followed and observed a TDMS Portal. Being of an adventurous turn and, of course, concerned for your welfare, I stepped through —"

"Why didn't they arrest you? I was picked up for operating the carrier."

"They had some such notion. A whiff of stun gas served to discourage them. Now let's hurry along before the management revives."

"Wait a minute, Blote. I'm not sure I want to be rescued by you — in spite of your concern for my welfare."

"Rubbish, Dan! Come along." Blote looked around. "Frightful place! No population! No commerce! No deals!"

"It has its compensations. I think I'll stay. You run along."

"Abandon a colleague? Never!"

"If you're still expecting me to deliver a time machine, you're out of luck. I don't have one."

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"No? Ah, well, in a way I'm relieved. Such a device would upset accepted physical theory. Now, Dan, you mustn't imagine I harbor ulterior motives — but I believe our association will yet prove fruitful."

Dan rubbed a finger across his lower lip thoughtfully. "Look, Blote. You need my help. Maybe you can help me at the same time. If I come along, I want it understood that we work together. I have an idea —"

"But of course, Dan! Now shake a leg!"

Dan sighed and stepped through the portal. The yellow-clad guard lay on the floor, snoring. Blote led the way back into the great hall. TDMS officials were scattered across the floor, slumped over desks, or lying limp in chairs. Blote stopped before one of a row of shimmering portals.

"After you, Dan."

"Are you sure this is the right one?"

"Quite."

Dan stepped through in the now familiar chill and found himself back in the park. A small dog sniffing at the carrier caught sight of Blote, lowered his leg and fled.

"I want to pay Mr. Snithian a visit," Dan said, climbing into a seat.

"My idea exactly," Blote agreed, lowering his bulk into place.

"Don't get the idea I'm going to help you steal anything."

"Dan! A most unkind remark. I merely wish to look into certain matters."

"Just so you don't start looking into the safe."

Blote tsked, moved a lever. The carrier climbed over a row of blue trees and headed west.

IV

Blote brought the carrier in high over the Snithian Estate, dropped lower and descended gently through the roof. The pale, spectral servants moving about their duties in the upper hall failed to notice the wraith-like cage passing soundlessly among them.

In the dining room, Dan caught sight of the girl — Snithian's daughter, perhaps — arranging shadowy flowers on a sideboard.

"Let me take it," Dan whispered. Blote nodded. Dan steered for the kitchen, guided the carrier to the spot on which he had first emerged from the vault, then edged down through the floor. He brought the carrier to rest and neutralized all switches in a shower of sparks and blue light.

The vault door stood open. There were pictures stacked on the bunk now, against the wall, on the floor. Dan stepped from the carrier, went to the nearest heap of paintings. They had been dumped hastily, it seemed. They weren't even wrapped. He examined the topmost canvas, still in a heavy frame; as though, he reflected, it had just been removed from a gallery wall —

"Let's look around for Snithian," Dan said. "I want to talk to him."

"I suggest we investigate the upper floors, Dan. Doubtless his personal pad is there."

"You use the carrier; I'll go up and look the house over."

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"As you wish, Dan." Blote and the carrier flickered and faded from view.

Dan stooped, picked up the pistol he had dropped in the scuffle with Fiorello and stepped out into the hall. All was silent. He climbed stairs, looked into rooms. The house seemed deserted. On the third floor he went along a corridor, checking each room. The last room on the west side was fitted as a study. There was a stack of paintings on a table near the door. Dan went to them, examined the top one.

It looked familiar. Wasn't it one that *Look* said was in the Art Institute at Chicago?

There was a creak as of an unoiled hinge. Dan spun around. A door stood open at the far side of the room — a connecting door to a bedroom, probably.

"Keep well away from the carrier, Mr. Slane," a high thin voice said from the shadows. The tall, cloaked figure of W. Clyde Snithian stepped into view, a needle-barreled pistol in his hand.

"I thought you'd be back," he piped. "It makes my problem much simpler. If you hadn't appeared soon, it would have been necessary for me to shift the scene of my operations. That would have been a nuisance."

Dan eyed the gun. "There are a lot more paintings downstairs than there were when I left," he said. "I don't know much about art, but I recognize a few of them.

"Copies," Snithian snapped.

"This is no copy," Dan tapped the top painting on the stack. "It's an original. You can feel the brushwork."

"Not prints, of course. Copies." Snithian whinnied. "Exact copies."

"These paintings are stolen, Mr. Snithian. Why would a wealthy man like you take to stealing art?"

"I'm not here to answer questions, Mr. Slane!" The weapon in Snithian's hand bugged. A wave of pain swept over Dan. Snithian cackled, lowering the gun. "You'll soon learn better manners.

Dan's hand went to his pocket, came out holding the automatic. He aimed it at Snithian's face. The industrialist froze, eyes on Dan's gun.

"Drop the gun." Snithian's weapon clattered to the floor. "Now let's go and find Kelly."

"Wait!" Snithian shrilled. "I can make you a rich man, Slane."

"Not by stealing paintings."

"You don't understand. This is more than petty larceny!"

"That's right. It's grand larceny. These pictures are worth thousands."

"I can show you things that will completely change your attitude. Actually, I've acted throughout in the best interests of humanity!"

Dan gestured with the gun. "Don't plan anything clever. I'm not used to guns. This thing will go off at the least excuse, and then I'd have a murder to explain."

"That would be an inexcusable blunder on your part!" Snithian keened. "I'm a very important figure, Slane." He crossed the deep-pile rug to a glass-doored cabinet. "This," he said, taking out a flat

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black box, "contains a fortune in precious stones." He lifted the lid. Dan stepped closer. A row of brilliant red gems nestled in a bed of cotton.

"Rubies?"

"Flawless — and perfectly matched." Snithian whinnied. "*Perfectly* matched. Worth a fortune. They're yours, if you cooperate."

"You said you were going to change my attitude. Better get started."

"Listen to me, Slane. I'm not operating independently. I'm employed by the Ivroy, whose power is incalculable. My assignment has been to rescue from destruction irreplacable works of art fated to be consumed in atomic fire."

"What do you mean — fated?"

"The Ivroy knows these things. These paintings — all your art — are unique in the galaxy. Others admire but they cannot emulate. In the cosmos of the far future, the few surviving treasures of dawn art will be valued beyond all other wealth. They alone will give a renewed glimpse of the universe as it appeared to the eyes of your strange race in its glory."

"My strange race?"

Snithian drew himself up. "I am not of your race." He threw his cloak aside and straightened.

Dan gaped as Snithian's body unfolded, rising up, long, three-jointed arms flexing, stretching out. The bald head ducked now under the beamed ceiling. Snithian chuckled shrilly.

"What about that inflexible attitude of yours, now, Mr. Slane?" he piped. "Have I made my point?"

"Yes, but —" Dan squeaked. He cleared his throat and tried again. "But I've still got the gun."

"Oh, that." An eight-foot arm snaked out, flicked the gun aside. "I've only temporized with you because you can be useful to me, Mr. Slane. I dislike running about, and I therefore employ locals to do my running for me. Accept my offer of employment, and you'll be richly rewarded."

"Why me?"

"You already know of my presence here. If I can enlist your loyalty, there will be no need to dispose of you, with the attendant annoyance from police, relatives and busybodies. I'd like you to act as my agent in the collection of the works."

"Nuts to you!" Dan said. "I'm not helping any bunch of skinheads commit robbery."

"This is for the Ivroy, you fool!" Snithian said. "The mightiest power in the cosmos!"

"This Ivroy doesn't sound so hot to me — robbing art galleries —"

"To be adult is to be disillusioned. Only realities count. But no matter. The question remains: Will you serve me loyally?"

"Hell, no!" Dan snapped.

"Too bad. I see you mean what you say. It's to be expected, I suppose. Even an infant fire-cat has fangs."

"You're damn right I mean it. How did you get Manny and Fiorello on your payroll? I'm surprised

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even a couple of bums would go to work for a scavenger like you."

"I suppose you refer to the precious pair recruited by Blote. That was a mistake, I fear. It seemed perfectly reasonable at the time. Tell me, how did you overcome the Vegan? They're a very capable race, generally speaking."

"You and he work together, eh?" Dan said. "That makes things a little clearer. This is the collection station and Blote is the fence."

"Enough of your conjectures. You leave me no choice but to dispose of you. It's a nuisance, but it can't be helped. I'm afraid I'll have to ask you to accompany me down to the vault."

Dan eyed the door; if he were going to make a break, now was the time —

The whine of the carrier sounded. The ghostly cage glided through the wall and settled gently between Dan and Snithian. The glow died.

Blote waved cheerfully to Dan as he eased his grotesque bulk from the seat.

"Good day to you, Snithian," Blote boomed. "I see you've met Dan. An enterprising fellow."

"What brings you here, Gom Blote?" Snithian shrilled. "I thought you'd be well on your way to Vorplisch by now."

"I was tempted, Snithian. But I don't spook easy. There is the matter of some unfinished business."

"Excellent!" Snithian exclaimed. "I'll have another consignment ready for you by tomorrow."

"Tomorrow! How is it possible, with Manny and Fiorello lodged in the hosegow?" Blote looked around; his eye fell on the stacked paintings. He moved across to them, lifted one, glanced at the next, then shuffled rapidly through the stack. He turned.

"What duplicity is this, Snithian!" he rumbled. "All identical! Our agreement called for limited editions, not mass production! My principals will be furious! My reputation —"

"Shrivel your reputation!" Snithian keened. "I have more serious problems at the moment! My entire position's been compromised. I'm faced with the necessity for disposing of this blundering fool!"

"Dan? Why, I'm afraid I can't allow that, Snithian." Blote moved to the carrier, dumped an armful of duplicate paintings in the cage. "Evidence," he said. "The confederation has methods for dealing with sharp practice. Come, Dan, if you're ready. . ."

"You dare to cross me?" Snithian hissed. "I, who act for the Ivroy?"

Blote motioned to the carrier. "Get in, Dan. We'll be going now." He rolled both eyes to bear on Snithian. "And I'll deal with you later," he rumbled. "No one pulls a fast one on Gom Blote, Trader Fourth Class — or on the Vegan Federation."

Snithian moved suddenly, flicking out a spidery arm to seize the weapon he had dropped, aim and trigger. Dan, in a wash of pain, felt his knees fold. He fell slackly to the floor. Beside him, Blote sagged, his tentacles limp.

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"I credited you with more intelligence," Snithian cackled. "Now I have an extra ton of protoplasm to dispose of. The carrier will be useful in that connection."

V

Dan felt a familiar chill in the air. A Portal appeared. In a puff of icy mist, a tall figure stepped through.

Gone was the tight uniform. In its place, the lanky Australopithecine wore skin-tight blue-jeans and a loose sweat shirt. An oversized beret clung to the small round head. Immense dark glasses covered the yellowish eyes, and sandals flapped on the bare, long-toed feet. Dzhackoon waved a long cigarette holder at the group.

"Ah, a stroke of luck! How nice to find you standing by. I had expected to have to conduct an intensive search within the locus. Thus the native dress. However—" Dzhackoon's eyes fell on Snithian standing stiffly by, the gun out of sight.

"You're of a race unfamiliar to me," he said. "Still, I assume you're aware of the Interdict on all Anthropoid populated loci?"

"And who might you be?" Snithian inquired loftily.

"I'm a Field Agent of the Interdimensional Monitor Service."

"Ah, yes. Well, your Interdict means nothing to me. I'm operating directly under Ivroy auspices." Snithian touched a glittering pin on his drab cloak.

Dzhackoon sighed. "There goes the old arrest record."

"He's a crook!" Dan cut in. "He's been robbing art galleries!"

"Keep calm, Dan," Blote murmured. "no need to be overly explicit."

The Agent turned to look the Trader over.

"Vegan, aren't you? I imagine you're the fellow I've been chasing."

"Who, me?" the bass voice rumbled. "Look, officer, I'm a home-loving family man, just passing through. As a matter of fact —"

The uniformed creature nodded toward the paintings in the carrier. "Gathered a few souvenirs, I see."

"For the wives and kiddy. Just a little something to brighten up the hive."

"The penalty for exploitation of a sub-cultural anthropoid-occupied body is stasis for a period not to exceed one reproductive cycle. If I recall my Vegan biology, that's quite a period."

"Why, officer! Surely you're not putting the arm on a respectable law-abiding being like me? Why, I lost a tentacle fighting in defense of peace —" As he talked, Blote moved toward the carrier.

"— your name, my dear fellow," he went on. "I'll mention it to the Commissioner, a very close friend of mine." Abruptly the Vegan reached for a lever —

The long arms in the tight white jacket reached to haul him back effortlessly. "That was unwise, sir. Now I'll be forced to recommend subliminal reorientation during stasis." He clamped stout handcuffs on Blote's broad wrists.

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"You Vegans," he said, dusting his hands briskly. "Will you never learn?"

"Now, officer," Blote said, "You're acting hastily. Actually, I'm working in the interest of this little world, as my associate Dan will gladly confirm. I have information which will be of considerable interest to you. Snithian has stated that he is in the employ of the Ivroy —"

"If the Ivroy's so powerful, why was it necessary to hire Snithian to steal pictures?" Dan interrupted.

"Perish the thought, Dan. Snithian's assignment was merely to duplicate works of art and transmit them to the Ivroy."

"Here," Snithian cut in. "Restrain that obscene mouth!"

Dzhackoon raised a hand. "Kindly remain silent, sir. Permit my prisoners their little chat."

"You may release them to my custody," Snithian snapped.

Dzhackoon shook his head. "Hardly, sir. A most improper suggestion — even from an agent of the Ivroy." He nodded at Dan. "You may continue."

"How do you duplicate works of art?" Dan demanded.

"With a matter duplicator. But, as I was saying, Snithian saw an opportunity to make extra profits by retaining the works for repeated duplications and sale to other customers — such as myself."

"You mean there are other — customers — around?"

"I have dozens of competitors, Dan, all busy exporting your arti-

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facts. You are an industrious and talented race, you know."

"What do they buy?"

"A little of everything, Dan. It's had an influence on your designs already, I'm sorry to say. The work is losing its native purity."

Dan nodded. "I have had the feeling some of this modern furniture was designed for Martians."

"Ganymedans, mostly. The Martians are graphic arts fans, while your automobiles are designed for the Plutonian trade. They have a baroque sense of humor."

"What will the Ivroy do when he finds out Snithian's been double-crossing him?"

"He'll think of something, I daresay. I blame myself for his defection, in a way. You see, it was my carrier which made it possible for Snithian to carry out his thefts. Originally, he would simply enter a gallery, inconspicuously scan a picture, return home and process the recording through the duplicator. The carrier gave him the idea of removing works en masse, duplicating them and returning them the next day. Alas, I agreed to join forces with him. He grew greedy. He retained the paintings here and proceeded to produce vast numbers of copies — which he doubtless sold to my competitors, the crook!"

Dzhackoon had whipped out a notebook and was jotting rapidly.

"Now, let's have those names and addresses," he said. "This will be the biggest round-up in TDMS history."

"And the pinch will be yours, dear sir," Blote said. "I foresee early promotion for you." He held out his shackled wrists. "Would you mind?"

"Well . . . "Dzhackoon unlocked the cuffs. "I think I'm on firm ground. Just don't mention it to Inspector Spoghodo."

"You can't do that!" Snithian snapped. "These persons are dangerous!"

"That is my decision. Now —"

Snithian brought out the pistol with a sudden movement. "I'll brook no interference from meddlers—"

There was a sound from the door. All heads turned. The girl Dan had seen in the house stood in the doorway, glancing calmly from Snithian to Blote to Dzhackoon. When her eyes met Dan's she smiled. Dan thought he had never seen such a beautiful face — and the figure matched.

"Get out, you fool!" Snithian snapped. "No; come inside, and shut the door."

"Leave the girl out of this, Snithian," Dan croaked.

"Now I'll have to destroy all of you," Snithian keened. "You first of all, ugly native!" He aimed the gun at Dan.

"Put the gun down, Mr. Snithian," the girl said in a warm, melodious voice. She seemed completely unworried by the grotesque aliens, Dan noted abstractedly.

Snithian swiveled on her. "You dare — !"

"Oh, yes, I dare, Snithian." Her voice had a firm ring now. Snithian stared at her. "Who . . . are you. . .?"

"I am the Ivroy."

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Snithian wilted. The gun fell to the floor. His fantastically tall figure drooped, his face suddenly gray.

"Return to your home, Snithian," the girl said sadly. "I will deal with you later."

"But . . . but. . ." His voice was a thin squeak.

"Did you think you could conceal your betrayal from the Ivroy?" she said softly.

Snithian turned and blundered from the room, ducking under the low door. The Ivroy turned to Dzhackoon.

"You and your Service are to be commended," she said. "I leave the apprehension of the culprits to you." She nodded at Blote. "I will rely on you to assist in the task — and to limit your operations thereafter to non-interdicted areas."

"But of course, your worship. You have my word as a Vegan. Do visit me on Vorplisch some day. I'd love the wives and kiddy to meet you." He blinked rapidly. "So long, Dan. It's been crazy cool."

Dzhackoon and Blote stepped through the Portal. It shimmered and winked out. The Ivroy faced Dan. He swallowed hard, watching the play of light in the shoulder-length hair, golden, fine as spun glass. . .

"Your name is Dan?"

"Dan Slane," he said. He took a deep breath. "Are you really the Ivroy?"

"I am of the Ivroy, who are many and one."

"But you look like — just a beautiful girl."

The Ivroy smiled. Her teeth were as even as matched pearls, Dan thought, and as white as —

"I *am* a girl, Dan. We are cousins, you and I — separated by the long mystery of time."

"Blote — and Dzhackoon and Snithian, too — seemed to think the Ivroy ran the Universe. But —"

The Ivroy put her hand on Dan's. It was as soft as a flower petal.

"Don't trouble yourself over this just now, Dan. Would you like to become my agent? I need a trustworthy friend to help me in my work here."

"Doing what?" Dan heard himself say.

"Watching over the race which will one day become the Ivroy."

"I don't understand all this — but I'm willing to try."

"There will be much to learn, Dan. The full use of the mind, control of aging and disease. . . Our work will require many centuries."

"Centuries? But —"

"I'll teach you, Dan."

"It sounds great," Dan said. "Too good to be true. But how do you know I'm the man for the job? Don't I have to take some kind of test?"

She looked up at him, smiling, her lips slightly parted. On impulse, Dan put a hand under her chin, drew her face close and kissed her on the mouth. . .

A full minute later, the Ivroy, nestled in Dan's arms, looked up at him again.

"You passed the test," she said.

END

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THE END OF THE SEARCH

BY DAMON KNIGHT

He had searched for endless years for the most valuable collector's item of all . . .

Dreams and memories mingled inextricably in Firefoal's mind now, so that the object of his search was not always the same. . . Sometimes, with peneray scanner and keen listening devices, he stalked the last specimen of *hidden twitterer*, that saucer-eyed mouselike creature spawned from a mutated ovum twenty million years after the last acre of raw earth had been covered over and sealed away, while life went on in the steel honeycomb above it. . . Sometimes, with atavistic hair sprouting like fungus from his weathermarked face, he hunted the dodo, or the okapi, or searched for the secret nesting grounds of the passenger pigeon. But always he knew these fantasies for what they were, so that he hunted not for specimens so much as for Meaning. He sought the reality behind the symbol.

Sometimes the search would be interrupted by long, brilliantly illumined scenes of seeming irrelevance. Firefoal bore them patiently, waiting for the slow tilt of blue into gray that heralded a change in the dream.

Once he stood, a child before the

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silent effigy of a great, proud creature that posed with head lifted and nostrils widening to a vanished breeze. Satiny brown it was of coat, and jet of mane and tail, and in its huge eyes were distances and open space such as he had never seen. His father, a vague figure in a long robe, moved his hand across a spot of light that glowed on the wall. Instantly the great animal vanished, and a parched white skeleton stood in its place. He screamed then and would not be comforted, though his father made the animal appear again. He knew that he would never pass his fingers over those delicate nostrils or mount that wide back, for the animal was dead. And it was the last.

But that was when he was a child, and before he understood that he had been born into the world for only one thing. He studied the sciences, and one day he knew, as his father had known, that they were all imperfections, all blunted instruments, leading finally to the one science that capped all.

Geology changed the faces of continents, before man rendered them forever changeless.

Medicine wiped out many species inimical to man.

Metallurgy forged weapons. Chemistry and physics armed them.

Comparative biology explained the beginning and the end.

Natural history, the oldest of all, replaced them all when they had done their work and faded. At the very apex of human endeavor, it explained all, justified all, fulfilled all.

He was fifteen, sitting before a screen from which gazed the deep-sunken eyes of a man long dead. He took no notes, needed none, for already his eager brain had mastered the principles of total recall. "Consider," said the dead man's voice. "From the sterile beginning life struggled outward, forms proliferating upon forms, until the earth swarmed and crawled with living organisms of every shape and size and color. The air was filled with their hum and the earth rustled to their coming and going, and the sea silently rippled with their multitudes.

"In every cubic centimeter of dirt and in every breath of air, in every drop of water, swam uncountable lives. Then, slowly, the pendulum swung.

"The ant and the termite survived, but the trilobite and the dinosaur did not. Fewer and fewer new forms took the place of those which died in natural catastrophes or exterminated each other. And then man was born, the great destroyer.

"For millions of years, man killed only those life forms which offered him competition on a gross scale, or which supplied him with things he needed. See, on this chart. Now van Leeuwenhoek; Pasteur; the competitors in the microcosm are recognized and the battle is joined. Now preventive medicine. Now the electron microscope. Now the world city begins.

"And now, for the first time, it is realized that *all* other living organisms are man's enemies. Where is there place for horses and

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cattle, field and forests, in a totally inhabited world.

"Now we approach the present day. Sea water was the most efficient source of elements for conversion. . .it is gone. The number of species coexistent with man is three thousand, five hundred and eight, and of these all but approximately nine hundred are nearing extinction. The day is not far off when we shall see an Earth swept clean of all life inimical to ourselves. . .that is to say, all life but our own. . ."

But this was a biologist who spoke; one of the last biologists. To Firefoal, the natural historian, all this frantic life was not dead but triumphantly alive. "The proper study of mankind is Man." Yet no history of man was adequate to describe him except the tale of the organisms he had vanquished. Here they were, in this great robot-tended museum which was the work of Firefoal's line. Not all of them, for many upon many had vanished unnoticed and unknown. But what man could do, man had done. Here was the last surviving member of nearly every species, elephant and emu, walrus and wapiti, dragonfly and dog, the great and the small, preserved, analyzed and documented, each in its place.

Now the half-dream shifted again, and the tension returned. The quarry still floated before him, elusive and dim, shape melting into protean shape, and he still pursued. How old was he now? Five hundred years? A thousand? That question trailed off unanswered like the others, but he was old, he knew, and his life-work almost done. . .*almost* done.

The world would not let him rest. He pressed on, though his heart thudded painfully and his breath was a knife in his breast. Again and again he glanced at the creature he followed, and each time it melted, a phantom of a memory. He was no closer to his goal; and time was short.

The pain caught him in a maze of color then and he fought it, struggling upward like a drowning man, till the dream shapes faded and the dream colors dimmed. Gently a pale light floated down upon him, and in it he saw an army of his victims, rank upon rank, each exquisitely clear and perfect in its cubicle. The picture strengthened as the pain receded and dropped somewhere below him; and now he saw —

Saw the empty cubicle he had prepared before the sickness took him, and the mechanisms waiting beside it, and the tall robot which bent over him.

The robot took him up in careful arms, as the last of the pain dropped away into coldness. Only a spark now, Firefoal watched as he was carried into the cubicle — watched, fading, as the mechanisms began their work. He stood there, proudly erect, his old eyes looking into long-ago distances, his nostrils dilated to catch a vanished breeze. The last specimen. The greatest. The end and the cornerstone. Coldness now, fading. Darkness.

Satisfaction. **END**

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SPACEMAN ON A SPREE

BY MACK REYNOLDS

Illustrated by Nodel

What's more important— Man's conquest of space, or one spaceman's life?

I

They gave him a gold watch. It was meant to be symbolical, of course. In the old tradition. It was in the way of an antique, being one of the timepieces made generations past in the Alpine area of Eur-Asia. Its quaintness lay in the fact that it was wound, not electronically by power-radio, but by the actual physical movements of the bearer, a free swinging rotor keeping the mainspring at a constant tension.

They also had a banquet for him, complete with speeches by such bigwigs of the Department of Space Exploration as Academician Lofting Gubelin and Doctor Hans Girard-Perregaux. There was also somebody from the government who spoke, but he was one of those who were pseudo-elected and didn't know much about the field of space travel nor the significance of Seymour Pond's retirement. Si didn't bother to remember his name. He only wondered vaguely why the cloddy had turned up at all.

In common with recipients of gold watches of a score of generations before him, Si Pond would

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have preferred something a bit more tangible in the way of reward, such as a few shares of Variable Basic to add to his portfolio. But that, he supposed was asking too much.

The fact of the matter was, Si knew that his retiring had set them back. They hadn't figured he had enough shares of Basic to see him through decently. Well, possibly he didn't, given their standards. But Space Pilot Seymour Pond didn't have their standards. He'd had plenty of time to think it over. It was better to retire on a limited crediting, on a confoundedly limited crediting, than to take the two or three more trips in hopes of attaining a higher standard.

He'd had plenty of time to figure it out, there alone in space on the Moon run, there on the Venus or Mars runs. There on the long, long haul to the Jupiter satellites, fearfully checking the symptoms of space cafard, the madness compounded of claustrophobia, monotony, boredom and free fall. Plenty of time. Time to decide that a one room mini-auto-apartment, complete with an autochair and built-in autobar, and with one wall a teevee screen, was all he needed to find contentment for a mighty long time. Possibly somebody like Doc Girard-Perregaux might be horrified at the idea of living in a mini-auto-apartment ... not realizing that to a pilot it was roomy beyond belief compared to the conning tower of a space craft.

No. Even as Si listened to their speeches, accepted the watch and made a halting little talk of his own, he was grinning inwardly. There wasn't anything they could do. He had them now. He had enough Basic to keep him comfortably, by his standards, for the rest of his life. He was never going to subject himself to space cafard again. Just thinking about it, now, set the tic to going at the side of his mouth.

They could count down and blast off, for all he gave a damn.

The gold watch idea had been that of Lofting Gubelin, which was typical, he being in the way of a living anachronism himself. In fact, Academician Gubelin was possibly the only living man on North America who still wore spectacles. His explanation was that a phobia against having his eyes touched prohibited either surgery to remould his eyeballs and cure his myopia, or contact lenses.

That was only an alibi so far as his closest associate, Hans Girard-Perregaux, was concerned. Doctor Girard-Perregaux was convinced Gubelin would have even worn facial hair, had he but a touch more courage. Gubelin longed for yesteryear, a seldom found phenomenon under the Ultrawelfare State.

Slumped in an autochair in the escape room of his Floridian home, Lofting Gubelin scowled at his friend. He said, acidly, "Any more bright schemes, Hans? I presume you now acknowledge that appealing to the cloddy's patriotism, sentiment and desire for public acclaim have miserably failed."

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Girard-Perregaux said easily, "I wouldn't call Seymour Pond a cloddy. In his position, I am afraid I would do the same thing he has."

"That's nonsense, Hans. Zoroaster! Either you or I would gladly take Pond's place were we capable of performing the duties for which he has been trained. There aren't two men on North America — there aren't two men in the world! — who better realize the urgency of continuing our delving into space." Gubelin snapped his fingers. "Like that, either of us would give our lives to prevent man from completely abandoning the road to his destiny."

His friend said drily, "Either of us could have volunteered for pilot training forty years ago, Lofting. We didn't."

"At that time there wasn't such a blistering percentage of funkers throughout this whole blistering Ultrawelfare State! Who could foresee that eventually our whole program would face ending due to lack of courageous young men willing to take chances, willing to face adventure, willing to react to the stimulus of danger in the manner our ancestors did?"

Girard-Perregaux grunted his sarcasm and dialed a glass of iced tea and tequila. He said, "Nevertheless, both you and I conform with the present generation in finding it far more pleasant to follow one's way of life in the comfort of one's home than to be confronted with the unpleasantness of facing nature's dangers in more adventurous pastimes."

Gubelin, half angry at his friend's argument, leaned forward to snap rebuttal, but the other was wagging a finger at him negatively. "Face reality, Lofting. Don't require or expect from Seymour Pond more than is to be found there. He is an average young man. Born in our Ultrawelfare State, he was guaranteed his fundamental womb-to-tomb security by being issued that minimum number of Basic shares in our society that allows him an income sufficient to secure the food, clothing, shelter, medical care and education to sustain a low level of subsistence. Percentages were against his ever being drafted into industry. Automation being what it is, only a fraction of the population is ever called up. But Pond was. His industrial aptitude dossier revealed him a possible candidate for space pilot, and it was you yourself who talked him into taking the training . . . pointing out the more pragmatic advantages such as complete retirement after but six trips, added shares of Basic so that he could enjoy a more comfortable life than most and the fame that would accrue to him as one of the very few who still participate in travel to the planets. Very well. He was sold. Took his training, which, of course, required long years of drudgery to him. Then, performing his duties quite competently, he made his six trips. He is now legally eligible for retirement. He was drafted into the working force reserves, served his time, and is now free from toil for the balance of his life. Why should

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he listen to our pleas for a few more trips?"

"But has he no spirit of adventure? Has he no feeling for..."

Girard-Perregaux was wagging his finger again, a gesture that, seemingly mild though it was, had an astonishing ability to break off the conversation of one who debated with the easy-seeming, quiet spoken man.

He said, "No, he hasn't. Few there are who have, nowadays. Man has always paid lip service to adventure, hardships and excitement, but in actuality his instincts, like those of any other animal, lead him to the least dangerous path. Today we've reached the point where no one need face danger — ever. There are few who don't take advantage of the fact. Including you and me, Lofting, and including Seymour Pond."

His friend and colleague changed subjects abruptly, impatiently. "Let's leave this blistering jabber about Pond's motivation and get to the point. The man is the only trained space pilot in the world. It will take months, possibly more than a year, to bring another novitiate pilot to the point where he can safely be trusted to take our next explorer craft out. Appropriations for our expeditions have been increasingly hard to come by — even though in *our* minds, Hans, we are near important breakthroughs, breakthroughs which might possibly so spark the race that a new dream to push man out to the stars will take hold of us. If it is admitted that our organization has degenerated to the point that we haven't a single pilot, then it might well be that the Economic Planning Board, and especially those cloddies on Appropriations, will terminate the whole Department of Space Exploration."

"So..." Girard-Perregaux said gently.

"So some way we've got to bring Seymour Pond out of his retirement!"

"Now we are getting to matters." Girard-Perregaux nodded his agreement. Looking over the rim of his glass, his eyes narrowed in thought as his face took on an expression of Machiavellianism. "And do not the ends justify the means?"

Gubelin blinked at him.

The other chuckled. "The trouble with you, Lofting, is that you have failed to bring history to bear on our problem. Haven't you ever read of the sailor and his way of life?"

"Sailor? What in the name of the living Zoroaster has the sailor got to do with it?"

"You must realize, my dear Lofting, that our Si Pond is nothing more than a latter-day sailor, with many of the problems and viewpoints, tendencies and weaknesses of the voyager of the past. Have you never heard of the seaman who dreamed of returning to the village of his birth and buying a chicken farm or some such? All the long months at sea — and sometimes the tramp freighters or whaling craft would be out for years at a stretch before returning to home

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port — he would talk of his retirement and his dream. And then? Then in port, it would be one short drink with the boys, before taking his accumulated pay and heading home. The one short drink would lead to another. And morning would find him, drunk, rolled, tattooed and possibly sleeping it off in jail. So back to sea he'd have to go."

Gubelin grunted bitterly. "Unfortunately, our present-day sailor can't be separated from his money quite so easily. If he could, I'd personally be willing to lure him down some dark alley, knock him over the head and roll him myself. Just to bring him back to his job again."

He brought his wallet from his pocket, and flicked it open to his universal credit card. "The ultimate means of exchange," he grunted. "Nobody can spend your money, but you, yourself. Nobody can steal it, nobody can, ah, *con* you out of it. Just how do you expect to sever our present-day sailor and his accumulated nest egg?"

The other chuckled again. "It is simply a matter of finding more modern methods, my dear chap."

II

Si Pond was a great believer in the institution of the spree. Any excuse would do. Back when he had finished basic education at the age of twenty-five and was registered for the labor draft, there hadn't been a chance in a hundred that he'd have the bad luck to have his name pulled. But when it had been, Si had celebrated.

When he had been informed that his physical and mental qualifications were such that he was eligible for the most dangerous occupation in the Ultrawelfare State and had been pressured into taking training for space pilot, he had celebrated once again. Twenty-two others had taken the training with him, and only he and Rod Cameroon had passed the finals. On this occasion, he and Rod had celebrated together. It had been quite a party. Two weeks later, Rod had burned on a faulty take-off on what should have been a routine Moon run.

Each time Si returned from one of his own runs, he celebrated. A spree, a bust, a bat, a wing-ding, a night on the town. A commemoration of dangers met and passed.

Now it was all over. At the age of thirty he was retired. Law prevented him from ever being called up for contributing to the country's labor needs again. And he most certainly wasn't going to volunteer.

He had taken his schooling much as had his contemporaries. There wasn't any particular reason for trying to excell. You didn't want to get the reputation for being a wise guy, or a cloddy either. Just one of the fellas. You could do the same in life whether you really studied or not. You had your Inalienable Basic stock, didn't you? What else did you need?

It had come as a surprise when he'd been drafted for the labor force.

In the early days of the Ultra-

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welfare State, they had made a mistake in adapting to the automation of the second industrial revolution. They had attempted to give everyone work by reducing the number of working hours in the day, and the number of working days in the week. It finally became ludicrous when employees of industry were working but two days a week, two hours a day. In fact, it got chaotic. It became obvious that it was more practical to have one worker putting in thirty-five hours a week and getting to know his job well, than it was to have a score of employees, each working a few hours a week and none of them ever really becoming efficient.

The only fair thing was to let the technologically unemployed remain unemployed, with their Inalienable Basic stock as the equivalent of unemployment insurance, while the few workers still needed put in a reasonable number of hours a day, a reasonable number of weeks a year and a reasonable number of years in a life time. When new employees were needed, a draft lottery was held.

All persons registered in the labor force participated. If you were drawn, you must need serve. The dissatisfaction those chosen might feel at their poor luck was offset by the fact that they were granted additional Variable Basic shares, according to the tasks they fulfilled. Such shares could be added to their portfolios, the dividends becoming part of their current credit balance, or could be sold for a lump sum on the market.

Yes, but now it was all over. He had his own little place, his own vacuum-tube vehicle and twice the amount of shares of Basic that most of his fellow citizens could boast. Si Pond had it made. A spree was obviously called for.

He was going to do this one right. This was the big one. He'd accumulated a lot of dollars these past few months and he intended to blow them, or at least a sizeable number of them. His credit card was burning a hole in his pocket, as the expression went. However, he wasn't going to rush into things. This had to be done correctly.

Too many a spree was played by ear. You started off with a few drinks, fell in with some second rate mopsy and usually wound up in a third rate groggery where you spent just as much as though you'd been in the classiest joint in town. Came morning and you had nothing to show for all the dollars that had been spent but a rum-head.

Thus, Si was vaguely aware, it had always been down through the centuries since the Phoenecian sailor, back from his year-long trip to the tin mines of Cornwall, blew his hard earned share of the voyage's profits in a matter of days in the wine shops of Tyre. Nobody gets quite so little for his money as that loneliest of all workers, he, who must leave his home for distant lands, returning only periodically and usually with the salary of lengthy, weary periods of time to be spent hurriedly in an attempt to achieve the pleasure and happiness so long denied him.

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Si was going to do it differently this time.

Nothing but the best. Wine, women, song, food, entertainment. The works. But nothing but the best.

To start off, he dressed with great care in the honorable retirement-rank suit he had so recently purchased. His space pin he attached carefully to the lapel. That was a good beginning, he decided. A bit of prestige didn't hurt you when you went out on the town. In the Ultrawelfare State hardly one person in a hundred actually ever performed anything of value to society. The efforts of most weren't needed. Those few who did contribute were awarded honors, decorations, titles.

Attired satisfactorily, Si double-checked to see that his credit card was in his pocket. As an afterthought, he went over to the auto-apartment's teevee-phone, flicked it on, held the card to the screen and said, "Balance check, please."

In a moment, the teevee-phone's robot voice reported, "Ten shares of Inalienable Basic. Twelve shares of Variable Basic, current value, four thousand, two hundred and thirty-three dollars and sixty-two cents apiece. Current cash credit, one thousand and eighty-four dollars." The screen went dead.

One thousand and eighty-four dollars. That was plenty. He could safely spend as much as half of it, if the spree got as lively as he hoped it would. His monthly dividends were due in another week or so, and he wouldn't have to worry about current expenses. Yes, indeedy, Si Pond was as solvent as he had ever been in his thirty years.

He opened the small, closet-like door which housed his vacuum-tube two-seater, and wedged himself into the small vehicle. He brought down the canopy, dropped the pressurizer and considered the dial. Only one place really made sense. The big city.

He considered for a moment, decided against the boroughs of Baltimore and Boston, and selected Manhattan instead. He had the resources. He might as well do it up brown.

He dialed Manhattan and felt the sinking sensation that presaged his car's dropping to tube level. While it was being taken up by the robot controls, being shuttled here and there preparatory to the shot to his destination, he dialed the vehicle's teevee-phone for information on the hotels of the island of the Hudson. He selected a swank hostelry he'd read about and seen on the teevee casts of society and celebrity gossip reporters, and dialed it on the car's destination dial.

"Nothing too good for ex-Space Pilot Si Pond," he said aloud.

The car hesitated for a moment, that brief hesitation before the shot, and Si took the involuntary breath from which only heroes could refrain. He sank back slowly into the seat. Moments passed, and the direction of the pressure was reversed.

Manhattan. The shuttling began again, and one or two more trav-

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ersing sub-shots. Finally, the dash threw a green light and Si opened the canopy and stepped into his hotel room.

A voice said gently, "If the quarters are satisfactory, please present your credit card within ten minutes."

Si took his time. Not that he really needed it. It was by far the most swank suite he had ever seen. One wall was a window of whatever size the guest might desire and Si touched the control that dilated it to the full. His view opened in such wise that he could see both the Empire State Building Museum and the Hudson. Beyond the river stretched the all but endless city which was Greater Metropolis.

He didn't take the time to flick on the menu, next to the auto-dining table, nor to check the endless potables on the auto-bar list. All that, he well knew, would be superlative. Besides, he didn't plan to dine or do much drinking in his suite. He made a mock leer. Not unless he managed to acquire some feminine companionship, that was.

He looked briefly into the swimming pool and bath, then flopped himself happily onto the bed. It wasn't up to the degree of softness he presently desired, and he dialed the thing to the ultimate in that direction so that with a laugh he sank almost out of sight into the mattress.

He came back to his feet, gave his suit a quick patting so that it fell into press and, taking his credit card from his pocket, put it against the teevee-phone screen and pressed the hotel button so that registration could be completed.

For a moment he stood in the center of the floor, in thought. Take it easy, Si Pond, take it all easy, this time. No throwing his dollars around in second-class groggeries, no eating in automated luncheterias. This time, be it the only time in his life, he was going to frolic in the grand manner. No cloddy was Si Pond.

He decided a drink was in order to help him plan his strategy. A drink at the hotel's famous Kudos Room where celebrities were reputed to be a dime a dozen.

He left the suite and stepped into one of the elevators. He said, "Kudos Room."

The auto-elevator murmured politely, "Yes, sir, the Kudos Room."

At the door to the famous rendezvous of the swankiest set, Si paused a moment and looked about. He'd never been in a place like this, either. However, he stifled his first instinct to wonder about what this was going to do to his current credit balance with an inner grin and made his way to the bar.

There was actually a bartender. Si Pond suppressed his astonishment and said, offhand, attempting an air of easy sophistication, "Slivovitz Sour."

"Yes, sir."

The drinks in the Kudos Room might be concocted by hand, but Si noticed they had the routine teevee screens built into the bar for payment. He put his credit card on the screen immediately before him

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when the drink came, and had to quell his desire to dial for a balance check, so as to be able to figure out what the Sour had cost him.

Well, this was something like it. This was the sort of thing he'd dreamed about, out there in the great alone, seated in the confining conning tower of his space craft. He sipped at the drink, finding it up to his highest expectations, and then swiveled slightly on his stool to take a look at the others present.

To his disappointment, there were no recognizable celebrities. None that he placed, at least — top teevee stars, top politicans of the Ultrawelfare State or Sports personalities.

He turned back to his drink and noticed, for the first time, the girl who occupied the stool two down from him. Si Pond blinked. He blinked and then swallowed.

"*Zo-ro-aster,*" he breathed.

She was done in the latest style from Shanghai, even to the point of having cosmetically duplicated the Mongolian fold at the corners of her eyes. Every pore, but *every* pore, was in place. She sat with the easy grace of the Orient, so seldom found in the West.

His stare couldn't be ignored.

She looked at him coldly, turned to the bartender and murmured, "A Far Out Cooler, please, Fredric." Then deliberately added, "I thought the Kudos Room was supposed to be exclusive."

There was nothing the bartender could say to that, and he went about building the drink.

Si cleared his throat. "Hey," he said, "how about letting this one be on me?"

Her eyebrows, which had been plucked and penciled to carry out her Oriental motif, rose. "Really!" she said, drawing it out.

The bartender said hurriedly, "I beg your pardon, sir. . ."

The girl, her voice suddenly subtly changed, said, "Why, isn't that a space pin?"

Si, disconcerted by the sudden reversal, said, "Yeah. . .sure."

"Good Heavens, you're a spaceman?"

"Sure." He pointed at the lapel pin. "You can't wear one unless you been on at least a Moon run."

She was obviously both taken back and impressed. "Why," she said, "you're Seymour Pond, the pilot. I tuned in on the banquet they gave you."

Si, carrying his glass, moved over to the stool next to her. "Call me Si," he said. "Everybody calls me Si."

She said, "I'm Natalie. Natalie Paskov. Just Natalie. Imagine meeting Seymour Pond. Just sitting down next to him at a bar. Just like that."

"Si," Si said, gratified. Holy Zoroaster, he'd never seen anything like this rarified pulchritude. Maybe on teevee, of course, one of the current sex symbols, but never in person. "Call me Si," he said again. "I been called Si so long, I don't even know who somebody's talking to if they say Seymour."

"I cried when they gave you that antique watch," she said, her tone such that it was obvious she hadn't

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quite adjusted as yet to having met him.

Si Pond was surprised. "Cried?" he said. "Well, why? I was kind of bored wih the whole thing. But old Doc Gubelin, I used to work under him in the Space Exploration department, he was hot for it."

"*Academician* Gubelin?" she said. "You just call him *Doc?*"

Si was expansive. "Why, sure. In the Space Department we don't have much time for formality. Everybody's just Si, and Doc, and Jim. Like that. But how come you cried?"

She looked down into the drink the bartender had placed before her, as though avoiding his face. "I. . .I suppose it was that speech Doctor Girard-Perregaux made. There you stood, so fine and straight in your space-pilot uniform, the veteran of six exploration runs to the planets. . ."

"Well," Si said modestly, "two of my runs were only to the Moon."

". . .and he said all those things about man's conquest of space. And the dream of the stars which man has held so long. And then the fact that you were the last of the space pilots. The last man in the whole world trained to pilot a space craft. And here you were, retiring."

Si grunted. "Yeah. That's all part of the Doc's scheme to get me to take on another three runs. They're afraid the whole department'll be dropped by the Appropriations Committee on this here Economic Planning Board. Even if they can find some other patsy to train for the job, it'd take maybe a year before you could even send him on a Moon hop. So old man Gubelin, and Girard-Perregaux too, they're both trying to pressure me into more trips. Otherwise they got a Space Exploration Department, with all the expense and all, but nobody to pilot their ships. It's kind of funny, in a way. You know what one of those spaceships costs?"

"Funny?" she said. "Why, I don't think it's funny at all."

Si said, "Look, how about another drink?"

Natalie Paskov said, "Oh, I'd love to have a drink with you, Mr. . ."

"Si," Si said. He motioned to the bartender with a circular twist of the hand indicating their need for two more of the same. "How come you know so much about it? You don't meet many people are interested in space any more. In fact, most people are almost contemptuous, like. Think it's kind of a big boondoggle deal to help use up a lot of materials and all and keep the economy going."

Natalie said earnestly, "Why, I've been a space fan all my life. I've read all about it. Have always known the names of all the space pilots and everything about them, ever since I was a child. I suppose you'd say I have the dream that Doctor Girard-Perregaux spoke about."

Si chuckled. "A real buff, eh? You know, it's kind of funny. I was never much interested in it. And I got a darn sight less interested after my first run and I found out what space cafard was."

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She frowned. "I don't believe I know much about that."

Sitting in the Kudos Room with the most beautiful girl to whom he had ever talked, Si could be nonchalant about the subject. "Old Gubelin keeps that angle mostly hushed up and out of the magazine and newspaper articles. Says there's enough adverse publicity about space exploration already. But at this stage of the game when the whole ship's crammed tight with this automatic scientific apparatus and all, there's precious little room in the conning tower and you're the only man aboard. The Doc says later on when ships are bigger and there's a whole flock of people aboard, there won't be any such thing as space cafard, but..." Of a sudden the right side of Si Pond's mouth began to tic and he hurriedly took up his drink and knocked it back.

He cleared his throat. "Let's talk about some other angle. Look, how about something to eat, Natalie? I'm celebrating my retirement, like. You know, out on the town. If you're free..."

She put the tip of a finger to her lips, looking for the moment like a small girl rather than an ultra-sophisticate. "Supposedly, I have an appointment," she said hesitantly.

When the mists rolled out in the morning—if it was still morning—it was to the tune of an insistent hotel chime. Si rolled over on his back and growled, "*Zo-ro-as-ter*, cut that out. What do you want?"

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The hotel communicator said softly, "Checking-out time, sir, is at two o'clock."

Si groaned. He couldn't place the last of the evening at all. He didn't remember coming back to the hotel. He couldn't recall where he had separated from, what was her name . . .Natalie.

He vaguely recalled having some absinthe in some fancy club she had taken him to. What was the gag she'd made? Absinthe makes the heart grow fonder. And then the club where they had the gambling machines. And the mists had rolled in on him. Mountains of the Moon! but that girl could drink. He simply wasn't that used to the stuff. You don't drink in Space School and you most certainly don't drink when in space. His binges had been few and far between.

He said now, "I don't plan on checking out today. Don't bother me." He turned to his pillow.

The hotel communicator said quietly, "Sorry, sir, but your credit balance does not show sufficient to pay your bill for another day."

Si Pond shot up, upright in bed, suddenly cold sober.

His eyes darted about the room, as though he was seeing it for the first time. His clothes, he noted, were thrown over a chair haphazardly. He made his way to them, his face empty, and fished about for his credit card, finding it in a side pocket. He wavered to the teeveephone and thrust the card against the screen. He demanded, his voice as empty as his expression, "Balance check, please."

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In less than a minute the robot-voice told him: "Ten shares of Inalienable Basic. Current cash credit, forty-two dollars and thirty cents." The screen went dead.

He sank back into the chair which held his clothes, paying no attention to them. It couldn't be right. Only yesterday, he'd had twelve shares of Variable Basic, immediately convertible into more than fifty thousand dollars, had he so wished to convert rather than collect dividends indefinitely. Not only had he the twelve shares of Variable Basic, but more than a thousand dollars to his credit.

He banged his fist against his mouth. Conceivably, he might have gone through his thousand dollars. It was possible, though hardly believable. The places he'd gone to with that girl in the Chinese get-up were probably the most expensive in Greater Metropolis. But, however expensive, he couldn't possibly have spent fifty thousand dollars! Not possibly.

He came to his feet again to head for the teevee screen and demand an audit of the past twenty-four hours from Central Statistics. That'd show it up. Every penny expended. Something was crazy here. Someway that girl had pulled a fast one. She didn't seem the type. But something had happened to his twelve shares of Variable Basic, and he wasn't standing for it. It was his security, his defense against slipping back into the ranks of the cloddies, the poor demi-buttocked ranks of the average man, the desperately dull life of those who subsisted on the bounty of the Ultrawelfare State and the proceeds of ten shares of Inalienable Basic.

He dialed Statistics and placed his card against the screen. His voice was strained now. "An audit of all expenditures for the past twenty-four hours."

Then he sat and watched.

His vacuum-tube trip to Manhattan was the first item. Two dollars and fifty cents. Next was his hotel suite. Fifty dollars. Well, he had known it was going to be expensive. A Slivovitz Sour at the Kudos Room, he found, went for three dollars a throw, and the Far out Coolers Natalie drank, four dollars. Absinthe was worse still, going for ten dollars a drink.

He was impatient. All this didn't account for anything like a thousand dollars, not to speak of fifty thousand.

The audit threw an item he didn't understand. A one dollar credit. And then, immediately afterward, a hundred dollar credit. Si scowled.

And then slowly reached out and flicked the set off. For it had all come back to him.

At first he had won. Won so that the other players had crowded around him, watching. Five thousand, ten thousand. Natalie had been jubilant. The others had cheered him on. He'd bet progressively higher, smaller wagers becoming meaningless and thousands being involved on single bets. A five thousand bet on odd had lost, and then another. The kibitzers had gone silent. When he had attempted

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to place another five thousand bet, the teevee screen robot voice had informed him dispassionately that his current cash credit balance was insufficient to cover that amount.

Yes. He could remember now. He had needed no time to decide, had simply snapped, "Sell one share of Variable Basic at current market value."

The other eleven shares had taken the route of the first.

When it was finally all gone and he had looked around, it was to find that Natalie Paskov was gone as well.

Acadamician Lofting Gubelin, seated in his office, was being pontifical. His old friend Hans Girard-Perregaux had enough other things on his mind to let him get away with it, only half following the monologue.

"I submit," Gubelin orated, "that there is evolution in society. But it is by fits and starts, and by no means a constant thing. Whole civilizations can go dormant, so far as progress is concerned, for millennia at a time."

Girard-Perregaux said mildly, "Isn't that an exaggeration, Lofting?"

"No, by Zoroaster, it is not! Take the Egyptians. Their greatest monuments, such as the pyramids, were constructed in the earlier dynasties. Khufu, or Cheops, built the largest at Gizeh. He was the founder of the 4th Dynasty, about the year 2900 B. C. Twenty-five dynasties later, and nearly three thousand years, there was no greatly discernable change in the Egyptian culture."

Girard-Perregaux egged him on gently. "The sole example of your theory I can think of, offhand."

"Not at all!" Gubelin glared. "The Mayans are a more recent proof. Their culture goes back to at least 500 B. C. At that time their glyph-writing was already wide-spread and their cities, eventually to number in the hundreds, being built. By the time of Christ they had reached their peak. And they remained there until the coming of the Spaniards, neither gaining nor losing, in terms of evolution of society."

His colleague sighed. "And your point, Lofting?"

"Isn't it blisteringly obvious?" the other demanded. "We're in danger of reaching a similar static condition here and now. The Ultra-welfare State!" He snorted indignation. "The Conformist State or the Status Quo State, is more like it. I tell you, Hans, all progress is being dried up. There is no will to delve into the unknown, no burning fever to explore the unexplored. And this time it isn't a matter of a single area, such as Egypt or Yucatan, but our whole world. If man goes into intellectual coma this time, then all the race slows down, not merely a single element of it."

He rose suddenly from the desk chair he'd been occupying to pace the room. "The race must find a new frontier, a new ocean to cross, a new enemy to fight."

Girard-Perregaux raised his eyebrows.

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"Don't be a cloddy," Gubelin snapped. "You know what I mean. Not a human enemy, not even an alien intelligence. But something against which we must pit our every wit, our every strength, our strongest determination. Otherwise, we go dull, we wither on the vine."

The other at long last chuckled. "My dear Lofting, you wax absolutely lyrical."

Gubelin suddenly stopped his pacing, returned to his desk and sank back into his chair. He seemed to add a score of years to his age, and his face sagged. "I don't know why I take it out on you, Hans. You're as aware of the situation as I. Man's next frontier is space. First the planets, and then a reaching out to the stars. This is our new frontier, our new ocean to cross."

His old friend was nodding. He brought his full attention to the discussion at last. "And we'll succeed, Lofting. The last trip Pond made gives us ample evidence that we can actually colonize and exploit the Jupiter satellites. Two more runs, at most three, and we can release our findings in such manner that they'll strike the imaginations of every Tom, Dick and Harry like nothing since Columbus made his highly exaggerated reports on his New World."

"Two or three more runs," Gubelin grunted bitterly. "You've heard the rumors. Appropriations is going to lower the boom on us. Unless we can get Pond back into harness, we're sunk. The runs will never be made. I tell you, Hans..."

But Hans Girard-Perregaux was wagging him to silence with a finger. "They'll be made. I've taken steps to see friend Seymour Pond comes dragging back to us."

"But he *hates* space! The funker probably won't consent to come within a mile of the New Albuquerque Spaceport for the rest of his life, the blistering cloddy."

A desk light flicked green, and Girard-Perregaux raised his eyebrows. "Exactly at the psychological moment. If I'm not mistaken, Lofting, that is probably our fallen woman."

"Our *what*?"

But Doctor Hans Girard-Perregaux had come to his feet and personally opened the door. "Ah, my dear," he said affably.

Natalie Paskov, done today in Bulgarian peasant garb, and as faultless in appearance as she had been in the Kudos Room, walked briskly into the office.

"Assignment carried out," she said crisply.

"Indeed," Girard-Perregaux said approvingly. "So soon?"

Gubelin looked from one to the other. "What in the blistering name of Zoroaster is going on?"

His friend said, "Academician Gubelin, may I present Operative Natalie of Extraordinary Services Incorporated?"

"Extraordinary Services?" Gubelin blurted.

"In this case," Natalie said smoothly, even while taking the chair held for her by Doctor Girard-Perregaux, "a particularly apt name. It was a dirty trick."

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"But for a good cause, my dear."

She shrugged. "So I am often told, when sent on these far-out assignments."

Girard-Perregaux, in spite of her words, was beaming at her. "Please report in full," he said, ignoring his colleague's obvious bewilderment.

Natalie Paskov made it brief. "I picked up the subject in the Kudos Room of the Greater Metropolis Hotel, pretending to be a devotee of the space program as an excuse. It soon developed that he had embarked upon a celebration of his retirement. He was incredibly naive, and allowed me to over-indulge him in semi-narcotics as well as alcohol, so that his defensive inhibitions were low. I then took him to a gambling spot where, so dull that he hardly knew what he was doing, he lost his expendable capital."

Gubelin had been staring at her, but now he blurted, "But suppose he had won?"

She shrugged it off. "Hardly, the way I was encouraging him to wager. Each time he won, I urged him to double up. It was only a matter of time until..." she let the sentence dribble away.

Girard - Perregaux rubbed his hands together briskly. "Then, in turn, it is but a matter of time until friend Pond comes around again."

"That I wouldn't know," Natalie Paskov said disinterestedly. "My job is done. However, the poor man seems so utterly opposed to returning to your service that I wouldn't be surprised if he remained in his retirement, living on his Inalienable Basic shares. He seems literally terrified of being subjected to space cafard again."

But Hans Girard-Perregaux wagged a finger negatively at her. "Not after having enjoyed a better way of life for the past decade. A person is able to exist on the Inalienable Basic dividends, but it is almost impossible to bring oneself to it once a fuller life has been enjoyed. No, Seymour Pond will never go back to the dullness of life the way it is lived by nine-tenths of our population."

Natalie came to her feet. "Well, gentlemen, you'll get your bill — a whopping one. I hope your need justifies this bit of dirty work. Frankly, I am considering my resignation from Extraordinary Services, although I'm no more anxious to live on my Inalienable Basic than poor Si Pond is. Good day, gentlemen."

She started toward the door.

The teevee-phone on Gubelin's desk lit up and even as Doctor Doctor Girard-Perregaux was saying unctuously to the girl, "Believe me, my dear, the task you have performed, though odious, will serve the whole race," the teevee-phone said:

"Sir, you asked me to keep track of Pilot Seymour Pond. There is a report on the news. He suicided this morning." END

★ ★ ★ ★

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THE PROSPECT OF IMMORTALITY

An Abridgement from the Book

BY R. C. W. ETTINGER

1: Frozen Death and Frozen Sleep—and Some Consequences

Most of us now living have a chance for personal, physical immortality.

This remarkable proposition — which may soon become a pivot of personal and national life — is easily understood by joining one established fact to one reasonable assumption.

The fact: At liquid helium temperatures, it is possible, *right now*, to preserve dead people with essentially no deterioration, indefinitely.

The assumption: If civilization endures, medical science should *eventually* be able to repair almost any damage to the human body, including freezing damage and senile debility or other cause of death.

Hence we need only arrange to have our bodies, after we die, stored in suitable Freezers against the time when science may be able to help us. No matter what kills us, whether old age or disease, and even if freezing techniques are still crude when we die, *sooner or later* our friends of the future should be equal to the task of reviving and curing us. This is the essence of the main argument.

The arrangements will no doubt be handled at first by individuals, soon afterwards by private insurance companies and perhaps later by the Social Security system.

By preserving our bodies in as nearly lifelike a condition as pos-

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The world of tomorrow . . . today!

This condensation of a new, privately printed book is the first in a series of features giving an up-to-the-minute account of how well the world of science is catching up to the world of science fiction. Here Mr. Ettinger, a physical scientist and a Fellow of the National Science Foundation, investigates the potentialities of prolonged and perhaps nearly eternal life — right now!

sible, it is clear that you and I, *right now*, have a chance to avoid permanent death. But is it a substantial chance or only a remote one? I believe the odds are excitingly favorable, and it is purpose of this tract to make this belief plausible. The second (and of course primary) purpose is to improve those very odds, by encouraging the necessary efforts.

It is my hope that the cumulative weight of the discussion will convince the reader that his own life is at stake and that his personal efforts are urgently needed in this mighty undertaking. (The pun should be forgiveable.)

Let us spell out exactly what is proposed. In particular, it must be made very clear that our basic program is not one of "suspended animation" and does not depend on any special timetable of scientific progress, but can be instituted immediately.

It is simply proposed that, after one dies a natural death, his body be frozen and preserved at a temperature near absolute zero, which will prevent further deterioration for an indefinite period. The body will be damaged by the disease or old age which is the cause of death, and will be further damaged by freezing, if the current crude methods are used. But it will not decay nor suffer any more changes, and one assumes that at *some* date scientists will be able to restore life, health and vigor — and these, in fact, in greater measure than was ever enjoyed in the first life.

Clearly, the Freezer is more attractive than the grave, even if one has doubts about the future capabilities of science. With bad luck, the frozen people will simply remain dead. But with good luck the resuscitees will drink the wine of centuries unborn. The likely prize is so enormous that even slender odds would be worth embracing.

The basic program is one of "suspended death", in the sense that death is real by ordinary criteria, but not absolute; dissolution is arrested and not progressive. The body cannot be revived by present standards, but still is not *very* dead, since the condition of the cells does not differ greatly from that in life. Setting aside for the moment the question of repairing the cause of

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death, actual full-body freezing and revival of a human being is anticipated fairly soon by some workers. Dr. James F. Connell, Jr. (St. Vincent's Hospital, New York) is reported in 1962 to have said, "If all the medical personnel involved with this problem make a concerted effort, we will do it in less than five years."

II: The State of the Art

Our argument stands on three legs: freezing, resuscitation and repair. The first leg is strong; it is already possible to freeze bodies cold enough to preserve them indefinitely. Several authorities have reported that metabolism is essentially indetectable at liquid-nitrogen temperatures (-197° C), although free radical activity may occur. At liquid helium temperatures, however, a few degrees above absolute zero, the reaction rates are calculated to be slower than at liquid-nitrogen temperatures by a factor of about ten trillion!

As to resuscitation, many workers with laboratory animals have reported successful resuscitation of mammals frozen at temperatures not much below that of freezing water, and of lower organisms and cells at temperatures as low as -272.2° C — less than one degree above absolute zero. Embryo chicken hearts, for example, have been cooled to about -190° C, then thawed out and beating resumed. Fowl sperm kept for a year at that temperature has been successfully used to inseminate hens, producing fertile eggs and normal chicks. Glycerol and similar protective agents have shown promise in averting or minimizing freezing damage. The mechanism of freezing damage is still poorly understood, though experimental work proceeds vigorously. When the public becomes interested in Freezers, progress should become much more rapid.

As to repair, the immediate cause of death for the people in the Freezers — you and I — will usually be the failure of some vital organ. After thawing us, the future medicos will have to repair or replace the defective organ at once.

The use of "banks" of human spare parts has received much attention. Dr. L. L. Haynes is reported already to have deep-frozen human organs and returned them to life. Routine transplant is not yet possible, because the "immune reaction" causes the host's body to reject the foreign matter; but leading biologists such as Dr. Jean Rostand are confident this barrier will be overcome.

Perhaps the future medicos will handle the situation by using machines to perform the vital function. Dr. Lee B. Lusted (Professor of biochemical engineering, University of Rochester) thinks that within fifty years it will be possible to replace nearly all of the body organs by compact artificial organs with built-in electronic control systems. It is even possible that the artificial organs will work so well they will be preferred over the biological ones.

Promising beginnings in organ regeneration have also been made. Professor Marcus Singer at Cornell

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University, by manipulating nerve tissue, has caused adult frogs to re-grow amputated limbs, although normally they cannot. As Dr. Singer says, "Obviously, there is some practical interest in the possibility that human beings might some day be able to re-grow tissues and organs."

The most delicate question, of course, concerns the brain. This can scarcely be grafted or re-grown without creating a different person. And the brain begins to deteriorate within a few minutes after clinical death. This appears to mean that, in order to have a reasonably good chance of early resuscitation, we must arrange to die with well-equipped freezing experts close at hand. But even in the event of extensive brain damage, there may be some hope. One might also, of course, decide not to wait for natural death, but arrange for freezing somewhat ahead of such time, thus ensuring better bodily condition.

III: The Uses of Immortality

The people who glibly assert they "wouldn't want to live forever" are not necessarily stupid; they just have not given the matter much thought. The main difficulty is that few people have the remotest conception of what the future will be like. They think of it dimly as mid-twentieth century, plus maybe sliding sidewalks, family helicopters and a twenty-hour work week. They fail to understand that the differences will be qualitative as well as quantitative.

In particular, they fail to grasp that *people* will be different, including themselves. Mental qualities, including both intellectual power and personality or character, will be profoundly altered, not only in our descendants but in ourselves, in you and me, the resuscitees. It is almost taken for granted by experts in the field that genetic science will in time enable us to mold our children as we please. For example, Dr. Philip Sieketiz:

"I think we are approaching the greatest event in human history, even in the history of life on this earth, and that is the deliberate changing by man of many of the biological processes . . . Already we can very easily produce mutants in bacterial strains; we will soon be able to control these changes; and it is not such a big jump from bacteria to plant, to animals or to man himself . . . we will be able to plan ahead so that our children will be what we would like them to be — physically and even mentally." And Professor H. J. Muller, Nobel Prize winner in genetics, states he is convinced that man will remake himself genetically: "We may attain to modes of thought and living that today would seem inconceivably godlike."

If your great-great grandson is a seven-foot genius with shoulders a yard broad, can you compete? Can you live?

The problem is real, but there are solutions. Somatic improvement may stay abreast, or get ahead of, genetic improvement. It will become possible to perform extensive improvement in living individuals by

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biological techniques, e.g. using regeneration with somatic mutation. There is also vast potential in the use of prostheses, mental as well as physical, e.g. by coupling a human mind to an electronic computer. In fact, the man-machine combination may be superior to any purely biological superman.

It is not easy to picture one's activities in the world of the future. Presumably there will still be work in the form of scientific investigation and perhaps administration, and there will be artistic activities, as well as the enjoyment of athletics and human companionship. But many people find the latter do not give them much of a boot and cannot conceive of themselves as scientists or artists.

They must be reminded that not only will the world be changed but themselves also — both in their ability to perform and their ability to appreciate and enjoy. There are already many forerunners of these techniques: tranquilizers and "psychic energizers", the electric stimulation of local centers in the brain, etc.

But there remains the question of long-range goals and fundamental values and motivations, of the nature of happiness. The prospect of immortality forces us to come to grips with abstruse problems of psychology and philosophy which have heretofore been almost entirely the province of the specialist. The main problems of the future will be exactly these "philosophical" questions, which will become real concerns in the life of the individual.

IV: Immortality and Religion

At first thought, one might expect the aims and programs of the Freezers to be fiercely opposed by religious leaders and especially by representatives of the "hereafter" religions of Christianity and Islam. After all, the notion that death is not absolute and final, but a matter of degree and reversible, seems to do violence to the notion of "soul" and to the duality of body and spirit which plays an important part in religion.

Nevertheless, I believe that ultimately the religions will support the Freezer programs, and that this support will be spearheaded by Roman Catholics, for these two reasons:

Suicide is a sin.

As I understand it, Christians regard both murder and suicide as sinful under most circumstances, and this whether by act of commission or omission. Physicians are required to take all available measures to save life, and to prolong it, even if the measures are not certain of success. Temporary death, or clinical death with a recognized chance of resuscitation, can hardly be deemed death at all, and hence the Freezers must be recognized as a probable means of saving or prolonging life. It will then follow that failure to use the Freezers is tantamount to suicide or to murder.

Prolonging the lives of unbelievers extends the opportunity to save them.

There will be of course a stormy period of confusion and soul-search-

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ing, but in the end I believe the churches must favor the Freezers.

V: The Economics of Immortality

Even though John K. Galbraith and others have described our society as "affluent", most people know in their bones this is balderdash. In 1958 the median American family income was only $5,050, which might look good to a Hottentot but is scarcely tolerable by our present standards, and which seems entirely intolerable if we dare lift our faces from the dust long enough to catch a glimpse of what may be and ought to be. Our wants greatly exceed our wealth, even though most of us are not yet sophisticated enough adequately to express those wants.

This being the case, one may tend to be daunted by the likely costs of a Freezer program, and still more by the prospect of immortality with its population problems.

Yet there is reason for optimism. If we only assume progress continues more or less as it has done in this century, we shall grow richer rather rapidly. Since about 1890 the yearly increase in productivity has averaged around 2.3%. If we assume an average rate of increase of income of 2.5% yearly for the next 300 years, and if we assume no inflation or other disturbing influence, then in the year 2258 the median income will be over $8,000,000 a year! The average woman will then have much more spending money than any movie star does today — and still more important, will have much more to spend it on.

If we take a really long view, the production of wealth depends simply on the availability of *matter, energy* and *organization.*

The kind of matter doesn't matter: with the right techniques and enough energy, any kind of atom can be transmuted to any other kind, in principle if not yet in practice. Energy will also be available without limit. John E. Ullman of Columbia University has predicted that by 1968 nuclear fission energy will become as cheap as energy from conventional sources, and rapidly thereafter become much cheaper. When the fusion problem (controlled thermonuclear reaction) is solved, there will be a nearly boundless supply of fuel in the deuterium of sea water.

Our trump card, finally, is that unlimited organizing capacity is also in sight, in the shape of intelligent, self-propagating machines. Such a machine need show only a small profit. That is, it must be able to reproduce itself from scratch and also do some directly useful work before it wears out. This is enough to insure, on the compound-interest principle, that starting with only one machine we can in sufficient time have as many machines and as much wealth as we please. One expects, of course, that in practice the profit margin will be ample.

In a simplified, representational sense, then, one may picture the golden age society in which every citizen owns a tremendous, intelligent machine, which will scoop up earth, or air, or water and spew forth whatever is desired in any re-

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quired amounts — whether caviar, gold bricks, hernia operations, psychiatric advice, impressionist paintings, spaceships or pastel mink toilet rolls. It will keep itself in repair and, in fact, continuously improve itself, and will build others like itself whenever required by an increase in the owner's family.

It is clear that, in the long run, as long as the machines reproduce themselves faster than people, there can be no economic problem. But now it is time to come down off Olympus and consider some very real and dangerous intermediate problems, for example, the *cost of private freezers.*

In rough figures, the total cost of death at present — including funeral, embalming, casket, cemetery plot and perpetual care supplied by an investment of funds to provide maintenance costs—is typically in the neighborhood of $1,000. Now let us try to guess the cost of Freezing.

The preparation of the body may correspond roughly to a major operation by a team of surgeons using expensive cryogenic equipment and therefore can perhaps be expected to cost several hundred dollars. More difficult to assess is the cost of the Dormantory and its maintenance, but there are some suggestive known costs.

In Detroit in 1962 a mausoleum crypt can be had for $1,250. The mausoleum itself cost about $3,000,000 to build and holds 6,500 bodies.

The Freezer will tend to be more expensive than this in that it must be underground, or in a hillside, for protection against bombing. On the other hand, the Freezer need not be as fancy nor as spacious as a mausoleum. Once it is filled up there is no need for routine access. And both the volume-to-surface ratio and the insulation thickness can be much greater for the Dormantory than for an above-ground, routine-access freezer, which much relieves the refrigeration problem and thus the cost.

As to the cost of installing and maintaining the refrigeration equipment, the simplest scheme (and probably the most expensive) would involve merely surrounding the storage space with liquid helium and insulating layers, replacing the liquid helium as it evaporates.

Liquid helium in a 4,000 liter spherical container 2 meters in diameter, shielded by liquid nitrogen, evaporates at about 0.2% per day. If we consider a cubical storage space 30 meters on an edge, this will hold 13,500 bodies at 2 cubic meters per body. If we assume the evaporation rate is about proportional to the area of the exposed surface, as it ought to be, then the liquid helium evaporating per day would be roughly 3200 liters.

Liquid helium is quoted in Detroit in 1962 at $7 per liter; and at this figure the evaporation loss comes to roughly $1.66 per day per body, or about $600 per body per year. Actually the price for large amounts will surely be much lower. Helium is available in large quantities. As to replenishing the liquid nitrogen shield, liquid nitrogen is only 50 cents per liter in

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100 liter lots. Its latent heat of vaporization per dollar's worth is much larger than that of helium, and the thermal gradient responsible for the heat leak could be made very small thus minimizing the cost.

Since the cost of cooling and recycling the helium will surely be much less than the cost of simply replacing it, perhaps it is not unreasonable to guess at a figure of $200 per body per year for maintenance as a first approximation. To produce this much would require capital of $6,667 invested at 3%.

Adding together the $1250 storage space cost, the $6,667 capital investment for refrigerating cost and a few hundred dollars for preparation of the body then yields a rough total of $8,500 per body as the tentative cost of a private Freezer program on a group basis.

VI: Au Revoir

The prize is Life — and not just more of the life we know (although even this would be sweet enough to many) but a grander and more glorious life unfolding in shapes, colors and textures we can yet only glimpse. To win this prize will require mighty efforts — not by George, but by you and me.

Not everybody will reach for Life. There are many who fear change and danger more than death itself, and who value ease, comfort and momentary security above the hope of heaven. There are the death-seekers and the failure-lovers to whom effort and risk are the worst of all evils.

Yet we can be certain that forceful leaders will appear. Large numbers of Americans will soon come not only to perceive but to *feel* the vastness and the grandeur of the prize, and to understand that all other prizes, all previous goals, are secondary.

Then, for the first time in the history of the world, it will be Au Revoir, but not good-by.

We do not have copies of The Prospect of Immortality for sale, nor is there at present an edition available through book stores. A few copies of the privately printed first edition, plastic bound, containing the complete text plus bibliographical data, etc., may be ordered at $2 each direct from the author: R. C. W. Ettinger, 24041 Stratford, Oak Park 37, Michigan.

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A GUEST OF GANYMEDE

By C. C. MacAPP

Illustrated by Giunta

On Jupiter's moons great treasure awaits a daring man—and so does Death!

I

His employer had paid enormously to have the small ship camouflaged as a chunk of asteroid-belt rock, and Gil Murdoch had successfully maneuvered it past the quarantine. Now it lay snugly melted into the ice; and if above them enough water had boiled into space to leave a scar, that was nothing unique on Ganymede's battered surface. In any case, the Terran patrols weren't likely to come in close.

Murdoch applied heat forward and moved the ship gingerly ahead.

"What are you doing now?" Waverill demanded.

Murdock glanced at the blind man. "Trying to find a clear spot, sir, so I can see into the place."

"What for? Why don't you just contact them?"

"Just being careful, sir. After all, we don't know much about them." Murdoch kept the annoyance out of his voice. He had his own reasons for wanting a preliminary look at the place, though the aliens had

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undoubtedly picked them up thousands of miles out and knew exactly where they were now.

Something solid, possibly a rock imbedded in the ice, bumped along the hull. Murdoch stopped the ship, then moved on more slowly.

The viewscreens brightened. He stopped the drive, then turned off the heat forward. Water, milky with vapor bubbles, swirled around them, gradually clearing. In a few minutes it froze solid again and he could see.

They were not more than ten feet from the clear area carved out of the ice. Murdoch had the viewpoint of a fish in murky water, looking into an immersed glass jar. The place was apparently a perfect cylinder, walled by a force-field or whatever held back the ice. He could see the dark translucency of the opposite wall, about fifty yards away and extending down eighty or ninety feet from the surface. He'd only lowered the ship a third that far, so that from here he looked down upon the plain one-story building and the neat lawns and hedges around it.

The building and greenery occupied only one-half of the area, the half near Murdoch being paved entirely with gravel and unplanted. That, he presumed, was where they'd land. The building was fitted to the shape of its half-circle, and occupied most of it, like a half cake set in a round box with a little space around it. A gravel walkway, bordered by grass, ran along the straight front of the building and around the back curve of it. The hedges surrounded the half-circle at the outside.

There was an inconspicuous closed door in the middle of the building. There were no windows in the flat gray wall.

The plants looked Terran, and apparently were rooted in soil, though there must be miles of ice beneath. Artificial sunlight poured on the whole area from the top. Murdoch had heard, and now was sure, that something held an atmosphere in the place.

"What are we waiting for?" Waverill wanted to know.

Murdoch reached for a switch and said, simply, "Hello."

The voice that answered was precise and uninflected. "Who are you."

"My employer is Frederick Waverill. He has an appointment."

"And you."

"Gilbert Murdoch."

There was a pause, then, "Gilbert Andrew Murdoch. Age thirty-four. Born in the state called Illinois."

Murdoch, startled, hesitated, then realized he'd probably been asked a question. "Er — that's right."

"There is a price on your head Murdoch."

Murdoch hesitated again, then said, "There'd be a price on your own if Earth dared to put it there."

Waverill gripped the arms of his seat and stood up, too vigorously for the light gravity. "Never mind all that. I hired this man because he could make the contact and get

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me here. Can you give me back my eyes?"

"We can but first of all I must warn both of you against trying to steal anything from us or prying into our methods. Several Terrans have tried but none have escaped alive."

Waverill made an impatient gesture. "I've already got more money than I can count. I've spent a lot of it, a very great lot, on the metal you wanted, and I have it here in the ship."

"We have already perceived it and we do not care what it has cost you. We are not altruists."

That, thought Murdoch, could be believed. He felt clammy. If they knew so much about him, they might also be aware of the years he'd spent sifting and assessing the rumors about them that circulated around the tenuous outlaw community of space. Still, he'd been as discreet as was humanly possible.

He wondered if Waverill knew more than he pretended. He thought not; Murdoch's own knowledge was largely meticulous deduction. This much Murdoch knew with enough certainty to gamble his life on it: the treatments here involved a strange virus-like thing which multiplied in one's veins and, for presumably selfish or instinctive reasons, helped the body to repair and maintain itself. He knew for dead certain that the aliens always carefully destroyed the virus in a patient's veins before letting him go.

He thought he knew why.

The problem was to smuggle out any viable amount of the virus. Even a few cells, he thought, would be enough if he could get away from here and get them into his own blood. For it would multiply; and what would be the going price for a drop of one's blood — for a thousandth of a drop — if it carried virtual immortality?

A man could very nearly buy Earth.

The voice was speaking again. "Move straight ahead. The field will be opened for you."

Murdoch got the ship moving. He was blanked out again by the melting ice until they popped free into air, with an odd hesitation and then a rush. The ship was borne clear on some sort of a beam. He could hear water cascading outside the hull for a second, then it was quiet. He glanced at the aft viewer and could see the tunnel where they'd come out, with a little water still in the bottom, confined by the force-field again. The water that had escaped was running off along a ditch that circled the clearing.

They were lowered slowly to the gravelled area. "Leave the ship," the voice directed, "and walk to the doorway you see."

Murdoch helped Waverill through the inner and outer hatches and led him toward the building. His information was that a force barrier sliced off this half of the circle from the other, and he could see that the hedges along the diameter pressed against some invisible plane surface. He hesitated as they came to it, and the voice said,

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"Walk straight ahead to the door. The field will be opened for you."

He guided Waverill in the right direction. As they passed the midpoint he felt an odd reluctance, a tingle and a slight resistance. Waverill grunted at it, but said nothing.

The door slid open and they were in a plain room with doors at the left and right. The outer door closed behind them. The door on the right opened and Murdoch took Waverill through it. They were in a second room of the same size, bare except for a bench along one wall.

The voice said, "Remove your clothing and pile it on the floor."

Waverill complied without protest, and after a second Murdoch did too. "Step back," the voice said. They did.

The clothing dropped through the floor, sluggishly in the light gravity. Murdoch grunted. There were weapons built into his clothes, and he felt uneasy without them.

At the end of the room away from the middle of the building was another door like the one they'd come through. It opened and a robot walked in.

It was humanoid in shape, flesh-colored but without animal details. The head had several features other than the eyes, but none of them was nose, mouth or ears. It stood looking at them for a minute, then said in the familiar voice, "Do not be alarmed if you feel something now."

There was a tingling, then a warmth, then a vibration, and some other sensations not easy to classify. Murdoch couldn't tell whether they came from the robot or not. It was obvious, though, that the robot was scanning them. He resisted an urge to move his hands more behind him. He'd been well satisfied with the delicate surgery, but now he imagined it awkward and obvious.

The robot didn't seem to notice anything.

After a minute the robot said, "Through the door where I entered you will find a bedroom and a bath and a place to cook. It is best you retire now and rest."

Murdoch offered his arm to Waverill, who grumbled a little but came along.

The voice went on, seeming now to come from the ceiling, "Treatment will begin tomorrow. During convalescence Murdoch will care for Waverill. Sight will be restored within four days and you will be here one day after that then you may return to your ship. You will be protected from each other while you are here. If you keep your bargain you will be of no concern to us after you leave."

Murdoch watched Waverill's face but it showed nothing. He was sure the billionaire already had arrangements to shut him up permanently as soon as he was no longer needed, and he didn't intend, of course, to let those arrangements work out.

II

It developed that when the robot spoke of days, it meant a twenty-four-hour cycle of light and dark,

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with temperatures to suit. Under other circumstances, the place would have been comfortable.

The pantry was stocked with Earthside food that didn't help Murdoch's confidence any, since it was further evidence of the aliens' contacts with men. He cooked eggs and bacon, helped Waverill eat, then washed up the dishes.

He felt uneasy without his clothes; the more because the weapons in them, through years of habit, were almost part of himself. He thought, I'm getting too jumpy too soon. My nerves have to last a long time yet.

While he was putting the dishes to drain, the robot walked into the room and watched him for a moment. Then it said to Waverill, "Keep your hand on my shoulder and walk behind me." It reached for Waverill's right hand and placed it on its own right shoulder, revealing in the process that its arm was double-jointed. Then it simply walked through the wall. The blind man, without flinching and perhaps without being aware, passed through the seemingly firm substance.

When they were gone, Murdoch went quickly to the wall and passed his hands over it. Solid.

The voice came from the ceiling, "You can not penetrate the walls except when told to. Any place you can reach in this half of the grounds is open to you. The half where your ship is will remain cut off. You may amuse yourself as you wish so long as you do not willfully damage anything. We have gone to great effort to make this place comfortable for Terrans. Do not impair it for those who may come later."

Murdoch smiled inwardly. He'd known the walls would be solid; he'd only wanted to check the alien's watchfulness. Now he knew that there was more to it than just the robot, and that the voice was standard wherever it came from.

Not that the information helped any.

He walked back to the middle of the building and went through the door across the lobby. In that half of the building were a library, a gymnasium and what was evidently a Solar System museum. There was nothing new to him in the museum. Though there were useful tables and data in the library, he was too tense to study. The gymnasium he'd use later.

He went outside, walking gingerly on the gravel. The rear of the building was a featureless semicircle, the lawns and hedges unvaried. He took deep breaths of the air perfumed by flowers.

He jumped at a sudden buzz near his elbow. A bee circled up from a blossom and headed for the top of the building to disappear over the edge. Murdoch considered jumping for a hold and hauling himself up to the top of the building to see if there were hives there, but decided not to risk the aliens' displeasure. He realized now that he'd been hearing the bees all the time without recognizing it, and was annoyed at himself for not being more alert.

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He paid more attention now, and saw that there were other insects too; ants and a variety of beetles. There were no birds, mammals, or reptiles that he could see.

He parted the hedge and leaned close to the clear wall, shading the surface with his hands to see into the ice. There were a few rocks in sight. He found one neatly sliced in two by the force-field, or whatever it was, showing a trail of striations in the ice above it where it had slowly settled. On Ganymede, the rate of sink of a cool rock would be very slow in the ice.

Far back in the dimness he could see a few vague objects that might have been large rocks or ships. There were some other things with vaguly suggestive shapes, like long-eroded artifacts. Nothing that couldn't have been the normal fall-in from space.

He went to the front of the building again and stood for a while, looking at the graveled other half of the place. He couldn't see any insects there, and not a blade of grass. He approached the barrier and leaned against it, to see how it felt. It was rigid, but didn't feel glass-hard. Rather it had a very slight surface softness, so he could press a fingernail in a fraction of a millimeter.

He remembered that on Earth bees would blunder into a glass pane, and looked around to see if they hit the barrier. They didn't. An inch or so from it, they turned in the air and avoided it. Neither could he see any insects crawling on the invisible surface. He pressed his face closer, and noticed again the odd reluctance he'd felt when crossing on the way in.

At ground level, a dark line—not more than a quarter of an inch thick—marked where the barrier split the soil. Gravel heaped up against it on both sides.

He looked again toward the ship. If things went according to plan, the ship's proximity alarm would go off some time within the next two days. He didn't think the aliens would let him go to the ship, but he expected the diversion to help him check out something he'd heard about the barrier.

He flexed his thumbs, feeling the small lumps implanted in the web of flesh between thumb and finger on each hand. He'd practiced getting the tiny instruments in and out until he could do it without thinking. But now the whole project seemed ridiculously optimistic.

He felt annoyed at himself again. It's the aliens, he thought, that are getting my nerves. I've pulled plenty of jobs as intricate as this without fretting this way.

He began another circuit around the building, and was at the rear when the voice said, almost at his shoulder, "Murdoch, Waverill wants you."

His employer lay on his cot, looking drowsy. He scowled at Murdoch's footsteps. "Where you been? I want a drink."

Murdoch involuntarily glanced around. "Will they let you have it, sir?"

The voice came from the ceiling

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this time. "One ounce of hundred-proof liquor every four hours."

"Is there any here?" Murdoch asked.

"Tell us where to find it and we will get it from your ship."

Murdoch told them where the ship's supply of beverages was stowed, and headed for the front of the building. The robot was already in the lobby. It allowed him to follow outside, but said, "Stand back from the barrier."

Murdoch leaned against the building, trying not to show his eagerness. This was an unexpected break. He watched the ground level as the robot passed through the barrier. The dark line in the ground didn't change. The gravel stayed in place on both sides. Neither did the plants to the sides move. Evidently the barrier only opened at one spot to let things through.

The robot had no trouble with the hatches, and came out quickly with a bottle in one hand. Murdoch worried again whether it had discovered that the ship's alarm was set. If so, it didn't say anything as it drew near. It handed Murdoch the bottle and disappeared into the building.

After a few moments Murdoch followed. He found Waverill asleep, but at his footsteps the older man stirred. "Murdoch? Where's that drink?"

"Right away, sir." Murdoch got ice from the alien's pantry, put it in a glass with a little water and poured in about a jigger of rye. He handed it to Waverill, then poured himself a straight shot. Rye wasn't his favorite, but it might ease his nerves a little.

"Mm," said Waverill, " 'S better."

Murdoch couldn't see any marks on him. "Did they stick any needles into you, sir?"

"I'm not paying you to be nosey."

"Of course not, sir. I only wanted to know so I wouldn't touch you in a sore spot."

"There are no sore spots," Waverill said. "I want to sleep a couple of hours, so go away. Then I'll want a steak and a baked potato."

"Surely, sir."

Murdoch went outside again and toured the grounds without seeing anything new. He went to the barrier and stared at the ship for a while. Then, to work off tension, he went into the gymnasium and took a workout. He had a shower, looked in on Waverill and found him still asleep, then went back to the library. The books and tapes were all Terran, with no clues about the aliens. The museum was no more helpful. It was a relief when he heard Waverill calling.

There were steaks in the larder, and potatoes. Waverill grumbled at the wait while Murdoch cooked. The older man still acted a little drowsy, but had a good appetite. After eating he wanted to rest again.

Murdoch wandered some more, then forced himself to sit down in the library and pretend to study. He went over his plans again and again.

They were tenuous enough. He had to get a drop of Waverill's blood sometime within the next day

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or two, and get it past the barrier. Then he had to get it into the ship and, once away from Ganymede, inoculate himself. The problem of Waverill didn't worry him. The drowiness would have to be coped with, but based on the timetable Waverill's symptoms would give him, he should be able to set up a flight plan which would allow him to nap.

The time dragged agonizingly. He had two more drinks during the "afternoon", took another workout and a couple of turns around the building, and finally saw the sunlamps dimming. After that there was a time of lying on his bunk trying to force himself to relax. Finally he did sleep.

III

He was awake again with the first light; got up and wandered restlessly into the pantry. In a few minutes he heard Waverill stirring. "Murdoch!" came the older man's voice.

Murdoch went to him. "Yes, sir. I was just going to get breakfast."

"I can see the light!"

"You — that's wonderful, sir!"

"I can see the light! Dammit, where are you? Take me outside!"

"It's no brighter out there, sir." Murdoch was dismayed. He'd counted on another day before Waverill's sight began to return; with a chance to arrange a broken drinking glass, a knife in Waverill's way, something to bring blood in an apparent accident. Now. ...

"Take me outside!"

"Yes, sir." Murdoch, his mind spinning, guided the older man.

The door slid open for them and Waverill crowded through. As he stepped on the gravel with his bare feet, he said, "Ouch! Damn it!"

"Step lightly, sir, and it won't hurt." Murdoch had a sudden wild hope that Waverill would cut his feet on a sharp pebble. But there were no sharp pebbles; they were all rounded; and the light gravity made it even more unlikely.

Waverill raised his head and swung it to the side. "I can see spots of light up there."

"The sunlamps, sir. They're getting brighter."

"I can see where they are." The older man's voice was shaky. He looked toward Murdoch. "I can't see you, though."

"It'll come back gradually, sir. Why don't you have breakfast now?"

Waverill told him what to do with breakfast. "I want to stay out here. How bright is it now? Is it like full daylight yet?"

"No, sir. It'll be a while yet. You'll be able to feel it on your skin." Murdoch was clammy with the fear that the other's sight would improve too fast. He looked around for some sharp corner, some twig he could maneuver the man into. He didn't see anything.

"What's that sweet smell?" Waverill wanted to know.

"Flowers, sir. There's a blossoming hedge around the walkways."

"I'll be able to see flowers again. I'll. . ." The older man caught himself as if ashamed. "Tell me what this place looks like."

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Murdoch described the grounds, meanwhile guiding Waverill slowly around the curved path. Somewhere, he thought, there'll be something sharp I can bump him into. He had a wild thought of running the man into a wall; but a bloody nose would be too obvious.

"I can feel the warmth now," Waverill said, "and I can tell that they're brighter." He was swiveling his head and squinting, experimenting with his new traces of vision.

Murdoch carried on a conversation with half his attention, while his mind churned. He thought, I'll have to resist the feeling that it's safer here in back of the building. They'll be watching everywhere. He wished he could get the man inside; under the cover of serving breakfast he could improvise something. I'm sweating, he thought. I can just begin to feel the lamps, but I'm wet all over. I've got to —

He drew in his breath sharply. From somewhere he heard the buzz of a bee. His mind leaped upon the sound. He stopped walking, and Waverill said, "What's wrong with you?"

"Nothing. I — stepped on a big pebble."

"They all feel big to me. Damned outrage; taking away a man's..." Waverill's voice trailed off as he started experimenting with his eyes again.

There were more bees now, and presently Murdoch saw one loop over the edge of the building and search along the hedge. The first of them, he thought. There'll be more. He looked along the hedge. Most of the blossoms hadn't really closed for the night, though the petals were drawn together. He walked as slow as he dared. The buzzing moved tantalizingly closer, then away.

A second buzz added itself. He heard the insect move past them, then caught it in the corner of his eye.

Waverill stopped. "Is that a *bee?* Here?"

"I guess they keep them to fertilize the plants, sir."

"They bother me. I can't tell where they are."

"I'll watch out for them, sir."

He could see the insect plainly now, and thought, I have an excuse to watch it. The buzz changed pitch as the bee started to settle, then changed again as it moved on a few feet. Murdoch clamped his teeth in frustration. He tried to wipe his free hand where trousers should have been, and discovered that his thigh was sweaty too. He thought, surely Waverill must feel how sweaty my arm is.

The bee flirted with another flower, then settled on a petal. Tense, Murdoch subtly moved Waverill toward the spot. He could see every move of the insect's legs as it crawled into the bell of the flower.

"You can smell the blossoms more now, sir," he said. His throat felt dry, and he thought his voice sounded odd. "It's warming up and bringing out the smell, I guess." He halted, and tried not to let his arm

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tense or tremble. "This is a light blue blossom. Can you see it?"

"I — I'm not sure. I can see a bright spot a little above my head and right in front of me."

"That's a reflection off the ice, sir. The flower's down here." Holding his breath, he took Waverill's hand and moved it toward the flower. He found himself gritting his teeth and wincing as Waverill's fingers explored delicately around the flower.

The bee crawled out, apparently not aware of anything unusual, and moved away a few inches. It settled on a leaf and began working its legs together.

Murdoch felt like screaming.

Waverill's fingers stopped their exploration, then, as the bee was silent, began again. Waverill bent over to bring his eyes closer to his hand.

Shaking with anxiety now, Murdoch executed the small movements of his right hand that forced the tiny instrument out from between his thumb and forefinger. He felt a panicky desire to hurry, and forced himself to move slowly. He transferred the tiny syringe to his left hand, which was nearer Waverill. Waverill was about to pluck the blossom. Murdoch moved his right hand forward, trying — in case the aliens could see, though he had his body in the way — to make the move casual. He flicked a finger near the bee.

The bee leaped into the air, its buzz high-pitched and loud. Waverill tensed.

Murdoch cried, "Look out, sir!" and grabbed at Waverill's hand. He jabbed the miniature syringe into the fleshy part of the hand, at the outside, just below the wrist.

"Damn you!" Waverill bellowed, slapping at his right hand with his left. He jerked away from Murdoch.

"Here, sir! Let me help you!"

"Get away from me, you clumsy fool!"

"Please, sir. Let me get the stinger out. You'll squeeze more poison into your skin."

Waverill faced him, a hand raised as if to strike. Then he lowered it. "All right, damn you; and be careful about it."

Shakily, Murdoch took Waverill's hand. The syringe, dangling from the skin, held a trace of red in its minute plastic bulb. Murdoch gasped for breath and fought to make his fingers behave. He got hold of the syringe and drew it out. Pretending to drop it, he hid it in the junction of the third and fourth fingers of his left hand. He kept his body between them and the building, and tried to make his actions convincing. "There. It's out, sir."

Waverill was still cursing in a low voice. Presently he stopped, but his face was still hard with anger. "Take me inside."

"Yes, sir." Murdoch was weak with reaction. He drew a painful breath, gave the older man his left arm and led him back.

The tiny thing between his fingers felt as large and as conspicuous as a handgun.

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III

Murdoch felt as if the entire place was lined with eyes, all focused on his left hand. The act of theft clearly begun, his life in the balance, he felt now the icy nausea of fear; a feeling familiar enough, and which he knew how to control, but which he still didn't like. Fear. It's a strange thing, he thought. A peculiar thing. If you analyzed it, you could resolve it into the physical sick feeling and the wish in your mind, a very fervent wish, that you were somewhere else. Sometimes, if it caught you tightly enough, it was almost paralyzing so that your limbs and even your lungs seemed to be on strike. When fear gripped him he always remembered back to that turning point, that act that had made him an outlaw and an exile from Earth.

He'd been a pilot in the Space Force, young, just out of the Academy, and the bribe had seemed very large and the treason very small. It seemed incredibly naive, now, that he should not have understood that a double-cross was necessarily a part of the arrangement.

It was in escaping at all, against odds beyond calculating, that he had learned that he thought faster and deeper than other men, and that he had guts. Having guts turned out to be a different thing than he had imagined. It didn't mean that you stood grinning and calm while others went mad with fear. It meant you suffered all the panic, all the actual physical agony they did, but that you somehow stuck to the gun, took the buffeting and still had in a corner of your being enough wit to throw the counter-punch or think through to the way out. And that's what he had to do now. Endure the fear and keep his wits.

The robot had responded to Waverill's loud demand. It barely glanced at Waverill's hand, said, "It will heal quickly" and left. So far as Murdoch could tell, it didn't look at him.

As soon as he dared, he went and took a shower. In the process of lathering he inserted the syringe into the slit between thumb and forefinger of his left hand. In that hiding-place was a small plastic sphere holding a substance which ought to be nutrient to the virus. It was delicate work, but he'd practiced well and his fingers were under control now; and he got the point of the syringe into the sphere and squeezed. He relaxed the squeeze, felt the bulb return slowly to shape as it drew out some of the gummy stuff. He squeezed it back in, let the shower rinse the syringe and got that back into the pouch in his right hand.

He didn't dare discard it. There was always the possibility of failure and a second try, though the timing made it very remote. If the surgery was right, the pouches in his hand were lined with something impervious, so that none of the virus would get into his blood too soon. He lathered very thoroughly and rinsed off, then let a blast of warm air dry him. He felt neither fear nor elation now. Rather there

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was a let-down, and a weary apprehension at the trials ahead. The next big step was to get the small sphere past the barrier ahead of the time of leaving. He was pretty sure that he couldn't smuggle it out on his person. The alien's final examination and sterilization would prevent that.

Now there came the agony of waiting for the next step. He hadn't been able to rig things tightly enough to predict within several hours when it would come. It might be in one hour or in ten. A derelict was drifting in. He'd arranged that, but it might be late or it might be intercepted. He prepared a meal for Waverill and himself; sweated out the interval and cooked another. He wandered from library to gymnasium to out-of-doors, and fought endlessly the desire to stand at the barrier and stare at the ship.

The robot examined Waverill and revealed only that things were going well. Waverill spent most of his time bringing objects before his eyes, squinting and twisting his face, swallowed up in the ecstasy of his slowly returning vision. When darkness came the older man slept. Murdoch lay twisting on his own couch or dozed fitfully, beset with twisted dreams.

When the ship's alarm went off he didn't know at first whether it was real or another of the dreams.

His mind was sluggish in clearing, and when he sat up he could hear sounds at the front of the building. Suddenly in a fright that he would be too late, he jumped up and ran that way. The robot was already out of the building. It turned toward him with a suggestion of haste. "What is this."

Murdoch tried to act startled. "The ship's alarm! There's something headed in! Maybe Earth Patrol!"

"Why did you leave the alarm on."

"We — I guess I forgot in the excitement."

"That was dangerous stupidity. How is the alarm powered."

"It's self-powered. Rechargable batteries."

"You are fortunate that it is only a dead hull drifting by, otherwise we would have to dispose of you at once. Stay here. I will shut it off."

Murdoch pretended to protest mildly, then stood watching the robot go. His hands were moving in what he hoped looked like a gesture of futility. He got the plastic sphere out of its hiding-place and thumbed it like a marble. He held his breath. The robot crossed the barrier. Murdoch flipped the sphere after it. He saw it arc across the line and bound once, then he lost it in the gravel. In the dim light from Jupiter, low on the horizon, he could not find it again. Desperately, he memorized the place in relation to the hedge. When he and Waverill left, there would be scant time to look for it.

The robot didn't take long to solve the ship's hatches, go in through the lock, and locate the alarm. The siren chopped off in mid-scream. The robot came back

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out and started toward him. Involuntarily, he backed up against the building, wondering what the robot (or its masters) right deduce with alien senses, and whether swift punishment might strike him the next instant. But the robot passed him silently and disappeared indoors.

After a while he followed it inside, lay down on his couch, and resumed the fitful wait.

The next morning Waverill's eyes followed him as he fixed breakfast. There was life in them now, and purpose. The man looked younger, more vigorous, too.

Murdoch, trying not to sound nervous, asked, "Can you see more now, sir?"

"A little. Sit me so the light falls on my plate."

Murdoch watched the other's attempts to eat by sight rather than feel, adding mentally to his own time-table of the older man's recovery. Apparently Waverill could see his plate, but no details of the food on it. There was no more drowsiness, though. The movements were deft except that they didn't yet correlate with the eyes. The eyes seemed to have a little trouble matching up too, sometimes. No doubt it would take a while to restore the reflexes lost over the years.

Waverill walked the grounds alone in mid-morning. Murdoch, following far enough behind not to draw a rebuff, took the opportunity to spot his small treasure in the gravel beyond the barrier. Once found, it was dismayingly visible. But there was nothing he could do now. He was sweating again, and hoped with a sort of half-prayer to Fortune that his nerves wouldn't start to shatter once more.

He made lunch, then set himself the job of waiting out the afternoon. Ages later he cooked dinner. He managed to eat most of his steak, envying Waverill the wolfish appetite that made quick work of the meal.

The long night somehow wore through, and he embraced eagerly the small respite of breakfast.

He felt unreal when the alien voice said, "Do not bother to wash the dishes. Lie down on your bunks for your final examination. When you awake you may leave."

The fear spread through him again as he moved slowly to his couch. He thought, If they've caught me, this is when they'll kill me. He was afraid, no doubt of that; all the old symptoms were there. But, oddly, there was a trace of perverse comfort in the thought: Maybe I've lost. Maybe I'll just never wake up. Then dizziness hit him. He was aware of a brief, feeble effort to resist it, then he slid into darkness.

He came awake still dizzy, and with a drugged feeling. His mouth was dry. Breath came hard at first. He tried to open his eyes, but his lids were too stiff. He spent a few minutes just getting his breath to working, then he was able to open his eyes a little. When he sat up there was a wash of nausea.

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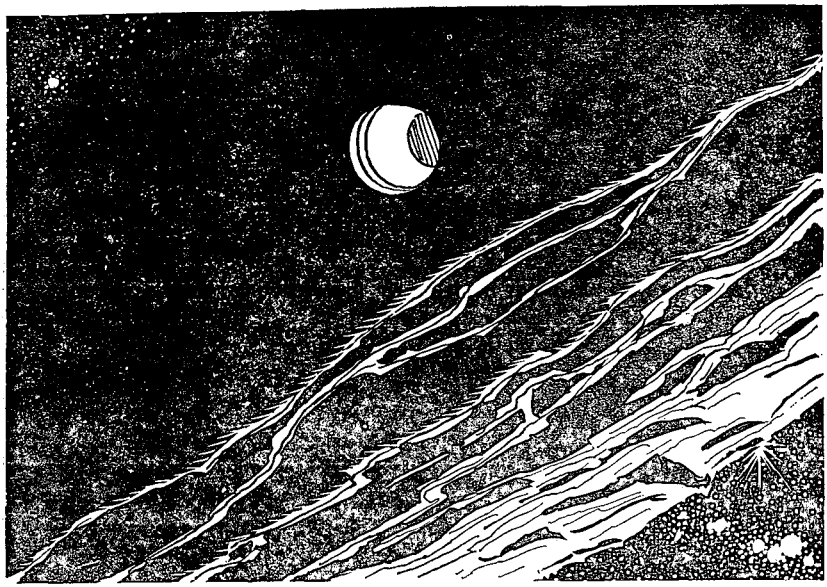

He sat on the edge of the bunk, head hung, until it lessened. Gradually he felt stronger.

Waverill was sitting up too, looking no better than Murdoch felt. He seemed to recover faster, though. Murdoch thought, He's actually healthier than I am now. I hope he hasn't become a superman.

The voice from the ceiling said, "Your clothes are in the next room. Dress and leave at once. The barriers will be opened for you."

Murdoch got to his feet and headed for the other room. He paused to let Waverill go ahead, and noticed that Waverill had no trouble finding the door. The older man wasn't talking this morning, and the jubilation he must feel at seeing again was confined, outwardly, to a tight grin.

They dressed quickly, Murdoch noting in the process that his clothes had been gone over carefully and all weapons removed. It didn't matter. But it did matter that he had to collect his prize on the way to the ship, and the sweaty anxiety was with him.

As they went out the door, Waverill stopped and let his eyes sweep about the grounds. What a cool character he is, Murdoch thought. Not a word. Not a sign of emotion.

Waverill turned and started toward the ship. Murdoch let him get a step ahead. His own eyes were searching the gravel. For a moment he had the panicky notion that it was gone; then he spotted it. He wouldn't have to alter his course to reach it. He saw Waverill flinch a little as they crossed the barrier,

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then he too felt the odd sensation. He kept going, trying to bring his left foot down on the capsule. He managed to do it.

Taut with anxiety, he paused and half-turned as if for a last look back at the place. He could feel the sphere give a little; or maybe it was a pebble sinking into the ground. He twisted his foot. He thought he could feel something crush. He hesitated, in the agony of trying to decide whether to go on or to make more sure by dropping something and pretending to pick it up. He didn't have anything to drop. He thought, I've got to go on or they'll suspect. He turned. Waverill had stopped and was looking back at him keenly. Murdoch gripped himself, kept his face straight, and went on.

Waverill had to grope a little getting into the ship, as though his hands still didn't correlate with his eyes, but it was clear that he could see all right, even in the ship's dim interior. Murdoch said, "Your eyes seem to be completely well, sir."

Waverill was playing it cool too. "They don't match up very well yet, and I have to experiment to focus. It'll come back, though." He went casually to his seat and lowered himself into it.

Murdoch got into the pilot's seat. "Better strap in, sir."

He didn't have long to wonder how they'd be sent off; the ship lifted and simply passed through whatever served as a ceiling.

There was no restraint when

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Murdoch turned on the gravs and took over. He moved off toward Ganymede's north pole, gaining altitude slowly, watching his screens, listening to the various hums and whines as the ship came alive. The radar would have to stay off until they were away from Ganymede, but the optical system showed nothing threatening. He moved farther from the satellite, keeping it between him and Jupiter.

"Hold it here," Waverill said.

Letting the ship move ahead on automatic, Murdoch turned in pretended surprise. "What. . ."

Waverill had a heat gun trained steadily on him. "I'll give you the course."

Murdoch casually reached down beside the pilot's chair. A compartment opened under his fingers, and he lifted a gun of his own.

Waverill's mouth went tight as he squeezed the trigger. Nothing happened. Waverill glanced at the weapon. Rage moved across his face. He hoisted the gun as if to throw it, then stopped as Murdoch lifted his own gun a little higher.

"You got to them," Waverill said flatly.

"The ones that did the remodeling job on this crate and hid that gun for you? Of course. Did you think you were playing with an idiot?"

"I could have sworn they were beyond reach."

"I reached them." Murdoch got unstrapped and stood up. He had the ship's acceleration just as he wanted it. "And naturally I went over the ship while you were blind. Get into your suit now, Waverill."

"Why?"

"I'm giving you a better break than you were going to give me. I'm putting you where the Patrol will pick you up."

"You won't make it, you son of a bitch. I've got some cards left."

"I know where you planned to rendezvous. By the time you buy your way out of jail, I'll be out of your reach."

"You *never* will."

"Talk hard enough and I may decide to kill you right now."

Waverill studied his face for a moment, then slowly got to his feet. He went to the suit locker, got out his suit, and squirmed into it. Murdoch grinned as he saw the disappointment on the other's face. The weapons were gone from the suit, too.

He said, "Zip up and get the helmet on, and get into the lock."

Waverill, face contorted with hate, complied slowly. Murdoch secured the inner hatch behind the man, then got on the ship's intercom. "Now, Waverill, you'll notice it's too far for a jump back to Ganymede. I'm going to spend about forty minutes getting into an orbit that'll give you a good chance. When I say shove off, you can either do it or stay where you are. If you stay, we'll be headed a different direction and I'll have to kill you for my own safety." He left the circuit open, and activated a spy cell so he could see into the lock. Waverill was leaning against the inner hatch, conserving what heat he could.

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IV

Murdoch set up a quick flight program, waited a minute to get farther from Ganymede and the aliens, then turned on a radar search and set the alarm. He unzipped his left shoe, got it off and stood staring at it for a moment, almost afraid to turn it over.

Then he turned it slowly. There was a sticky spot on the sole.

The muscles around his middle got so taut they ached. He hurried to the ship's med cabinet, chose a certain package of bandages and tore it open with unsteady fingers. There was a small vial hidden there. He unstoppered it and poured the contents onto the shoe sole.

He let it soak while he checked the pilot panel, then hurried back. With a probe, he mulled the liquid around on the shoe sole and waited a minute longer. Then he scraped all he could back into the vial and looked at it. There were a few bits of shoe sole in it, but none big enough to worry him. He got out a hypodermic and drew some of the fluid into it. The needle plugged. He swore, ejected a little to clear it and drew in some more.

When he had his left sleeve pushed up, he looked at the vein in the bend of his elbow for a little while, then he took a deep breath and plunged the needle in. He hit it the first time. He was very careful not to get any air into the vein.

He sighed, put the rest of the fluid back in the vial and stoppered it, and cleaned out the needle. Then he put a small bandage on his arm and went back to the pilot's seat. He felt tired now that it was done. The scan showed nothing dangerous. Waverill hadn't moved. Murdoch opened his mouth to speak to him, then decided not to. He flexed his arm and found it barely sore, then went over his flight program again. He made a small adjustment. The acceleration was just over one G, and it made him a little dizzy. He wondered if he could risk a drink. It hadn't hurt Waverill. He went to the small sink and cabinet that served as a galley, poured out a stiff shot into a glass, and mixed it with condensed milk. He took it back to the pilot's seat, not bothering with the free-fall cap, and drank it slowly.

It was nearly time to unload Waverill.

He checked course again, then thumbed the mike. "All right, Waverill. Get going. You should be picked up within nine or ten hours."

Waverill didn't answer, but the panel lights showed the outer hatch activated. Through the spy cell Murdoch could see the stars as the hatch slowly opened. Waverill jumped off without hesitating. Murdoch liked the tough old man's guts, and hoped he'd make it all right.

He closed the hatch and fed new data into the autopilot. He sagged into the seat as the ship strained into a new course, then it eased off to a steady forward acceleration. He was ready to loop around another of Jupiter's moons, then around the giant planet itself,

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on a course that should defy pursuit unless it were previously known.

He flexed his arm. It was a little sorer now. He wondered when the drowsiness would hit him. He didn't want to trust the autopilot until he was safely past Jupiter; if a meteor or a derelict got in the way, it might take human wits to set up a new course safely.

He had all the radar units on now. The conic sweep forward showed the great bulge of Jupiter at one side; no blips in space. The three Plan Position screens, revolving through cross-sections of the sphere of space around him, winked and faded with blips but none near the center. He thought, I've made it. I've gotten away with it, and I ought to feel excited. Instead, he was only tired. He thought, I'll get up and fill a thermos with coffee, then I can sit here.

He unstrapped and began to rise. Then his eyes returned to one of the scopes.

This particular one was seldom used in space; it was for planet landings. It scanned ahead in a narrow horizontal band, like a sea vessel's surface sweep. He'd planned only to use it as he transited Jupiter, to cut his course in near to the atmosphere, and it was only habit that had made him glance at it. The bright green line showed no peaks, but at the middle, and for a little way to each side, it was very slightly uneven.

He thought, It's just something in the system, out of adjustment. He looked at the forward sweep. There were no blips dead ahead. He moved the adjustments of the horizontal sweep, blurred the line, then brought it back to sharpness. Except in the middle. The blurriness there remained.

He opened a panel and punched automatic cross-checks, got a report that the instrument was in perfect order. He looked at the scope again. The blurred length had grown to either side. Clammy sweat began to form on his skin. He punched at the computers, set up a program that would curve the ship off its path, punched for safety verification, and activated the autopilot. He heard the drive's whine move higher, but felt no answering lateral acceleration. He punched for three G deceleration, working frantically to get strapped in. The drive shrieked but there was no tug at his body.

The blurred part of the green line was spreading.

He realized he was pressing against the side of his seat. That meant the ship was finally swerving. But he'd erased that program. And now, abruptly, deceleration hit him. He sagged forward against his straps, gasping for air. He heard a new whine as his seat automatically began to turn, pulling in the straps on one side, as it maneuvered to face him away from the deceleration. He was crushed sideways for a while, then the seat locked and he pressed hard against the back of it. This he could take, though he judged it was five or six G's. He labored for breath.

The deceleration cut off and he was in free fall. His screens and

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scopes were dark. The drive no longer whined. He thought, Something's got me. Something that can hide from radar, and control a ship from a distance like a fish on the end of a spear.

He tore at the straps, got free and leaped for the suit locker. He dressed in frantic haste, cycled the air lock ... and found himself on the surface of a planet.

He had been returned to Ganymede.

Panicked, he fled; then abruptly, where nothing had been, there was something solid in his path. He turned his face to avoid the impact and tried to get his arms in front of him. He crashed into something that did not yield. His arms slid around something, and without opening his eyes he knew the robot had him. He tried to fight, but his strength was pitiful. He relaxed and tried to think.

In his suit helmet radio the voice of the robot said, "We will put you to sleep now."

He fought frantically to break loose. His mind screamed, No! If you go to sleep now you'll never...

He was wrong.

His first waking sensation was delicious comfort. He felt good all over. He came a little more awake and his spaceman's mind began to reason: There's light gravity, and I'm supported by the armpits. No acceleration. I'm breathing something heavier than air, but it feels good in my lungs, and tastes good.

His eyelids unlocked themselves, and the shock of seeing was like a knife in his middle.

He was buried in the ice, looking out at the place where he and Waverill had stayed. He was far into the ice and could only see distortedly. Between him and the open were various things; rocks, eroded artifacts. At the edge of his vision on the right was a vaguely animal shape.

Terror made him struggle to turn his head. He couldn't; he was encased in something just tight enough to hold him. His nose and mouth were free, and a draft of the cloying atmosphere moved past them so that he could breath. There was enough space before his eyes for him to see the stuff swirling like a heavy fog. He thought, I'm being fed by what I breathe. I don't feel hungry. In horror, he forced the stuff out of his lungs. It was hard to exhale. He resisted taking any back in, but eventually he had to give up and then he fought to get it in. He tried to cry out, but the sound was a muffled nothing.

He yielded to panic and struggled for a while without accomplishing anything, except that he found that his casing did yield, very slowly, if he applied pressure long enough. That brought a little sanity, and he relaxed again until the exhaustion wore off.

There was movement in the vague shape at his right, and he felt a compulsion to see it more plainly. Even after it was in his vision, horrified fascination kept him straining until his head was turned toward it.

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It was alive; obscenely alive, a caricature of parts of a man. There was no proper skin, but an ugly translucent membrane covered it. The whole was encased as Murdoch himself must be, and from the casing several pipes stretched back into the dark ice. The legs were entirely gone, and only stubs of arms remained, sufficient for the thing to hang from in its casing. Bloated lungs pulsed slowly, breathing in and out a misty something like what Murdoch breathed. The stomach was shrunken to a small repugnant sack, hanging at the bottom with what might be things evolved from liver and kidneys. Blood moved from the lungs through the loathsome mess, pumped by an overgrown heart that protruded from between the lungs. A little blood circulated up to what had once been the head. The skull was gone. The nose and mouth were one round hole where the nutrient vapor puffed in and out. The brain showed horrible and shrunk through the membrane. A pair of lidless idiot eyes stared unmovingly in Murdoch's direction. The whole jawless head was the size of Murdoch's two fists doubled up, if he could judge the size through the distortion of the ice.

Sick but unable to vomit, Murdoch forced his eyes away from the thing. Now the aliens spoke to him, from somewhere. "Pretty isn't he Murdoch. He makes a good bank for the virus. You were right you know it does offer great longevity but it has its own ideas of what a host should be."

Murdoch produced a garbled sound and the aliens spoke again. "Your words are indistinct but perhaps you are asking how long it took him to become this way. He was one of our first visitors the very first who tried to steal from us. His plan was not as clever as your own which we found diverting though of course you had no chance against our science which is beyond your understanding." And, in answer to his moan, they said, "Do not be unphilosophical Murdoch you will find many thoughts to occupy your time."

I'll go mad, he thought. That's the way out!

But he doubted that even the escape of madness would be allowed. END

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THE TOTALLY RICH

BY JOHN BRUNNER

Illustrated by Finlay

Incredibly rich and powerful, they lack nothing—except a reason to go on with living!

The hammer keeps ringing on
somebody's coffin!
The hammer keeps ringing on
somebody's coffin!
The hammer keeps ringing on
somebody's coffin—
Way over in the new burying
ground!

I

They are the totally rich. You've never heard of them because they are the only people in the world rich enough to buy what they want: a completely private life. The lightning can strike into your life and mine — you win a big prize, or find yourself neighbor to an axe-murderer, or buy a parrot suffering from psittacosis — and you are in the searchlight, blinking shyly and wishing to God you were dead.

They won their prizes by being born. They do not have neighbors. If they require a murder they do not use so clumsy a means as an axe. They do not keep parrots. And if by some other million-to-one chance the searchlight does tend toward them, they buy it and instruct the man behind it to switch it off.

How many of them there are, I don't know. I have tried to estimate the total by adding together the gross national product of every country on Earth and dividing by the amount necessary to buy a government of a

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major industrial power. It goes without saying that you cannot maintain privacy unless you can buy any two governments.

I think there may be one hundred of these people. I have met one, and very nearly another.

By and large, they are night people. The purchase of light from darkness was the first economic advance. But you will not find them by going and looking at two o'clock in the morning, any more than at two in the afternoon. Not at the approved clubs; not at the polo-grounds; not in the Royal Enclosure at Ascot or on the White House lawn.

They are not on maps. Do you understand that? Literally, where they choose to live becomes a blank space in the atlases. They are not in census lists, *Who's Who* or Burke's *Peerage*. They do not figure in tax-collectors' files and the Post Office has no record of their addresses. Think of all the places where your name appears — the yellowing school-registers, the hospital case-records, the duplicate receipt form in the store, the signature on letters. In *no single such place* is there one of their names.

How it is done ... no, I don't know. I can only hazard a guess that to almost all human beings the promise of having more than everything they have ever conceived as desirable acts like a traumatic shock. It is instantaneous brainwashing; in the moment the promise is believed, the pattern of obedience is imprinted, as the psychologists say.

But they take no chances. They are not absolute rulers. Indeed, they are not rulers of anything except what directly belongs to them. But they have much in common with that Caliph of Baghdad to whom a sculptor came, commissioned to make a fountain. This fountain was the most beautiful in the world, and the Caliph approved it. Then he demanded of the sculptor whether anyone else could have made so lovely a fountain, and the sculptor proudly said no one but he in the whole world could have achieved it.

Pay him what was promised, said the Caliph. And also — put out his eyes.

I wanted champagne that evening, dancing girls, bright lights, music. All I had was a can of beer, but at least it was cold. I went to fetch it, and when I came back stood in the kitchen doorway looking at my ... living room, workshop, lab, whatever. It was a bit of all these.

All right, I didn't believe it. It was the 23rd of August and I had been here one year and one month, and the job was done. I didn't believe it, and I wouldn't be able to until I'd told people — called in my friends and handed the beer around and made them drink a toast.

I raised the can, I said, "To the end of the job!" I drank.

That hadn't turned the trick. I said, "To the Cooper Effect!" That was a little more like it, but it still wasn't quite complete.

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So I frowned for a moment, thought I'd got it and said triumphantly, "To Santadora — the most wonderful place on Earth, without which such concentration would never have been possible. May God bless her and all who sail from her."

I was drinking this third toast with a sense of satisfaction when Naomi spoke from the shadows of the open porch.

"Drink to me, Derek," she said. "You're coming closer, but you aren't quite there."

I slammed the beer-can down on a handy table, strode across the room and gave her a hug.

She didn't respond. She was like a beautiful doll displaying Paris creations in a store window. I had never seen her wearing anything but black, and tonight it was a black blouse of handspun raw silk and tight black pants tapering down to black espadrilles. Her hair, corn-pale, her eyes, sapphire-blue, her skin, luminous under a glowing tan, had always been so perfect they seemed unreal. I had never touched her before. Sometimes, lying awake at night, I had wondered why. She had no man. I had rationalized to myself that I prized this haven of peace, and the concentration I here found possible, too much to want to involve myself with a woman who never demanded anything but who — one knew it — would take nothing less than everything.

"It's done," I said, whirling and throwing out my arm. "The milennium has arrived! Success at last!" I ran to the haywire machine which I had never thought to see in real existence. "This calls for celebration — I'm going out to collect everyone I can find and. . ."

I heard my voice tail away. She had walked a pace forward, and lifted a hand that had been hanging by her side, weighed down by something. Now it caught the light. A bottle of champagne.

"How — ?" I said. And thought of something else, too. I had never been alone with Naomi before, in the thirteen months since coming to Santadora.

"Sit down, Derek," she said. She put the champagne bottle on the same table as the beer-can. "It's no good going out to collect anyone. There isn't anybody here except us."

I didn't say anything.

She cocked a quizzical eyebrow. "You don't believe me? You will."

Turning, she went to the kitchen. I waited for her to return with a pair of the glasses I kept for company. I was leaning forward with my hands on the back of a chair, and it suddenly seemed to me that I had subconsciously intended to put the chair between myself and this improbable stranger.

Dexterously she untwisted the wire of the champagne bottle, caught the froth which followed the cork in the first glass, poured the second and held it out to me. I came, moving like a stupid, stolid animal, to take hold of it.

"Sit down," she said again.

"But — where is everybody else? Where's Tim? Where are Conrad and Ella? Where — ?"

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"They've gone," she said. She came, carrying her glass, to sit facing me in the only other chair not cluttered with broken bits of my equipment. "They went about an hour ago."

"But — Pedro! And — !"

"They put out to sea. They are going somewhere else." She made a casual gesture. "I don't know where that is. But they are provided for."

Raising her champagne, she added, "To you, Derek — and my compliments. I was never sure that you would do it, but it had to be tried."

I ran to the window which overlooked the sea, threw it open and stared out into the gathering dark. I could see four or five fishing-boats, their riding lights like shifting stars, moving out of the harbor. On the quay was a collection of abandoned furniture and some fishermen's gear. It *did* look as though they were making a permanent departure.

"Derek, *sit down,*" Naomi said for the third time. "We're wasting time, and besides your wine is getting flat."

"But how can they bring themselves to — ?"

"Abandon their ancestral homes, dig up their roots, leave for fresh woods and pastures new?" Her tone was light and mocking. "They are doing nothing of the kind. They have no special attachment to Santadora. Santadora does not exist. Santador was built eighteen months ago, and will be torn down next month."

I said after an eternal silence, "Naomi, are you — are you feeling quite well?"

"I feel wonderful." She smiled. The light glistened on her white teeth. "Moreover, the fishermen were not fishermen and Father Francisco is not a priest and Conrad and Ella are not artists except in a very small way of business, as a hobby. Also my name is not Naomi. But since you're used to it — and so am I — it'll serve."

Now I had to drink the champagne. It was superb. It was the most perfect wine I had ever tasted. I was sorry not to be in the mood to appreciate the fact.

"Are you making out that this entire village is a sham?" I demanded. "A sort of colossal — what? Movie set?"

"In a way. A stage setting would be a more accurate term. Go out on the porch and reach up to the fretted decoration overhanging the step. Pull it hard. It will come away. Look at what you find on the exposed surface. Do the same to any other house in the village which has a similar porch — there are five of them. Then come back and we can talk seriously."

She crossed her exquisite legs and sipped her champagne. She knew beyond doubt that I was going to do precisely as she said.

Determinedly, though more to prevent myself feeling foolish than for any better reason, I went on to the porch. I put on the light — a swinging yellow bulb, on a support tacked amateurishly into place. — and looked up at the fretted

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decoration on the edge of the overhang. The summer insects came buzzing in towards the attractive lamp.

I tugged at the piece of wood. It came away. Holding it to the light, I read on the exposed surface, stamped in pale blue ink: *"Nombre* 14,006 — *José Barcos, Barcelona."*

I had no ready-made reaction. Accordingly, holding the piece of wood like a talisman in front of me, I went back indoors and stood over Naomi in her chair. I was preparing to phrase some angry comment, but I never knew what it was to be, for at that moment my eye was caught by the label on the bottle. It was not champagne. The name of the firm was unknown to me.

"It is the best sparkling wine in the world," Naomi said. She had followed my gaze. "There is enough for about — oh — one dozen bottles a year."

My palate told me there was some truth at least in what she said. I made my way dizzily to my chair and sank into it at last. I said, "I don't pretend to understand this. I — I haven't spent the last year in a place that doesn't exist!"

"But you have." Quite cool, she cradled her glass between her beautiful slim hands and set her elbows on the sides of the dirty chair. "By the way, have you noticed that there are never any mosquitoes among the insects that come to your lights? It was barely likely that you would have caught malaria, but the chance had to be guarded against."

I started. More than once I'd jokingly commented to Tim Hannigan that one of Santadora's greatest advantages was its freedom from mosquitoes...

"Good. The facts are beginning to make an impression on you. Cast your mind back now to the winter before last. Do you recall making the acquaintance of a man going under the name of Roger Gurney, whom you subsequently met one other time?"

I nodded. Of course I remembered Roger Gurney. Often, since coming to Santadora, I'd thought that that first meeting with him had been one of the two crucial events which changed my life.

"You gave Gurney a lift one rather unpleasant November night. His car had broken down and there was no hope of getting a necessary spare part before the morning, and he had to be in London for an urgent appointment at ten next day. You found him very congenial and charming. You put him up in your flat; you had dinner together and talked until four a.m. about what has now taken concrete form here in this room. You talked about the Cooper Effect."

I felt incredibly cold, as though a finger of that bleak November night had reached through the window and traced a cold smear down my spine. I said, "Then, that very night, I mentioned to him that I only saw one way of doing the necessary experiments. I said I'd have to find a village somewhere,

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without outside distractions, with no telephone or newspapers, without even a radio. A place where living was so cheap that I could devote myself for two or three years to my work, and not have to worry about earning my living."

My God! I put my hand to my forehead. It was as if memory was re-emerging like invisible ink exposed to a fire.

"That's right." Naomi nodded with an air of satisfaction. "And the second and only other time you met this delightful Roger Gurney was the weekend you were celebrating your small win on the football pools. Two thousand one hundred and four pounds, seventeen shillings and a penny. And he told you of a certain small Spanish village, named Santadora, where the conditions for your research were perfectly fulfilled. He said he had visited some friends here, named Conrad and Ella Williams. The possibility of turning your dreams into facts had barely occurred to you, but by the time you'd had a few drinks with Gurney, it seemed strange that you hadn't already laid your plans."

I slammed my glass down so hard it might have broken. I said harshly, "Who are you? What game are you playing with me?"

"No — game, Derek." She was leaning forward now, her blue jewel-hard eyes fixed on my face. "A very serious business. And one in which you also have a stake. Can you honestly say that but for meeting Roger Gurney, but for winning this moderate sum of money, you would be here — or anywhere — with the Cooper Effect translated into reality?"

I said after a long moment in which I reviewed one whole year of my life, "No. No, I must be honest. I can't."

"Then there's your answer." She laid her glass on the table and took out from the pocket of her tight pants a small cigarette-case. "I am the only person in the world who wanted to have and *use* the Cooper effect enough to bring it about. Not even Derek Cooper. Take one of these cigarettes."

She held out the case; the mere opening of it had filled the air with a fragrance I found startling. There was no name on the cigarette I took, the only clue to its origin being a faint striping of the paper, but when I drew the first smoke I knew that this, like the wine, was the best in the world.

She watched my reaction with amusement. I relaxed fractionally. How many times had I seen her smile like that, here, or much more often at Tim's, or at Conrad's.

"I wanted the Cooper Effect," she repeated. "And now I've got it."

I said, "Just a moment! I —"

"Then I want to rent it." She shrugged. It didn't matter. "After I've rented it, it is and will be forever yours. You have conceded yourself that but for — certain key interventions, let's call them — but for *me*, it would be a mere theory. An intellectual toy. I will not, even so, ask you to consider that a fair rental for it. For the use of your

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machine for one very specific purpose, I will pay you so much that for the rest of your life you may have anything *at all* your fancy turns to. Here!"

She tossed something — I didn't know where she had been hiding it — and I caught it reflexively. It was a long narrow wallet of soft, supple leather, zipped around the edge.

"Open it."

I obeyed. Inside I discovered one — two — three credit cards made out in my name, and a check-book with my name printed ready on the checks. On each of the cards there was something I had never seen before: a single word overprinted in red. The word was UNLIMITED.

I put them back in the wallet. It had occurred to me to doubt that what she said was true, but the doubt had faded at once. Yes, Santadora had been created in order to permit me to work under ideal conditions. Yes, she had done it. After what she had said about Roger Gurney, I didn't have room to disbelieve.

Consequently I could go to Madrid, walk into a salesroom and come out driving a Rolls-Royce; in it, I could drive to a bank and write the sum of one million pesetas on the first of those checks and receive it — if the bank had that much in cash.

Still looking at the wallet, zipping and unzipping it mechanically, I said, "All right. You're the person who wanted the Effect. Who are you?"

"The person who could get it." She gave a little dry laugh and shook her head. Her hair waved around her face like wings. "Don't trouble me with more inquiries, Derek. I won't answer them because the answers would mean nothing."

I was silent for a little while. Then, finally, because I had no other comment to make, I said, "At least you must say why you wanted what I could give you. After all, I'm still the only person in the world who understands it."

"Yes." She studied me. "Yes, that is true. Pour more wine for us; I think you like it."

While I was doing so, and while I was feeling my body grow calm after the shock and storm of the past ten minutes, she said, looking at the air, "You *are* unique, you know. A genius without equal in your single field. That's why you're here, why I went to a little trouble for you. I can get everything I want, but for certain things I'm inevitably dependent on the *one* person who can provide them."

Her eyes roved to my new, ramshackle — but functioning — machine.

"I wanted that machine to get me back a man," she said. "He has been dead for three years."

II

The world seemed to stop in its tracks. I had been blind ever since the vision of unlimited money dazzled me. I had accepted that, because Naomi could get

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everything, she knew what it was she was getting.

And, of course, she didn't.

A little imaginary pageant played itself out in my mind, in which faceless dolls moved in a world of shifting, rosy clouds. A doll clothed in black, with long pale hair, said, "He's dead. I want him back. Don't argue. Find me a way."

The other dolls bowed and went away. Eventually one doll came back and said, "There is a man called Derek Cooper who has some unorthodox ideas. Nobody else in all the world is thinking about this problem at all."

"See that he gets what he needs," said the doll with pale hair.

I put down the bottle of wine. I hesitated — yes, I still did, I was still dazzled. But then I took up the soft leather wallet and tossed it into Naomi's lap. I said, "You've cheated yourself."

"What?" She didn't believe it. The wallet which had fallen in her lap was an apparition. She did not move to pick it up, as though touching it would make it real.

I said, very thoughtfully because I was working out in my mind how it must be, "You talked about wanting my machine for a particular job. I was too dazed to wonder what the job might be. There *are* jobs which can be done with it, so I let it slide by. You are very rich, Naomi. You have been so rich all your life that you don't know about the one other thing that stands between the formulation of a problem and its solution. That's *time*, Naomi!"

I tapped the top of the machine. I was still proud of it. I had every right to be.

"You are like — like an empress of ancient China. Maybe she existed, I don't know. Imagine that one day she said, 'It has been revealed to me that my ancestors dwell in the moon. I wish to go there and pay the respects of a dutiful daughter. Find me a way.' So they hunted through the length and breadth of the empire, and one day a courtier came in with a poor and ragged man, and said to the empress, 'This man has invented a rocket.'

" 'Good,' said the empress. 'Perfect it so that I may go to the moon.' "

I had intended to tell the fable in a bantering tone — to laugh at the end of it. But I turned to glance at Naomi, and my laughter died.

Her face was as pale and still as a marble statue's, her lips a little parted, her eyes wide. On one cheek, like a diamond, glittered a tear.

All my levity evaporated. I had the sudden horrible impression that I had kicked at what seemed a stone and shattered a priceless bowl.

"No, Derek," she said after a while. "You don't have to tell me about time." She stirred, half turned in her chair, looked at the table beside her. "Is this glass mine?" she added in a lighter tone, putting out her slim and beautiful hand to point. She did not wipe the tear. It remained on her cheek for some

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time, until the hot dry air of the night kissed it away.

Taking the glass at my nod, she stood up and came across to look at my machine. She regarded it without comment, then said, "I hadn't meant to tell you what I wanted. Time drove me to it."

She drank deeply. "Now," she went on, "I want to know exactly what your pilot model *can* do."

I hesitated. So much of it was not yet in words. I had kept my word-thinking separate from my work-thinking all during the past year, and lately I had talked of nothing except commonplaces when I relaxed in the company of my friends. The closer I came to success, the more superstitious I had grown about mentioning the purpose of this project.

And — height of absurdity — now that I knew what she wanted, I was faintly ashamed that my triumph reduced on close examination to such a little thing.

Sensing my mood, she glanced at me and gave a faint smile. " 'Yes, Mr. Faraday' — or was it Humphrey Davy? — 'but what is it *good* for?' I'm sorry."

A new-born baby. Well enough. Somehow the phrase hit me — reached me emotionally — and I was suddenly not ashamed at all of anything. I was as proud as any father and much more so.

I pushed aside a stack of rough schematics on the corner of the desk. I held my glass, and it was so quiet I fancied I could hear the bubbles bursting as they surfaced in the wine.

I said, "It wasn't putting money in my way, or anything like that, which I owe you a debt of gratitude for. It was sending that persuasive and charming Roger Gurney after me. I had never met anyone else who was prepared to take my ideas except as an amusing talking-point. I'd kicked the concept around with some of the finest intellects I know. People I knew at university, for instance, who've left me a long way behind since then." I hadn't thought of this before. I hadn't thought of a lot of things, apparently.

"But he could talk them real. What I said to him was much the same as what I'd said to others before then. I'd talked about the — the space a living organism defines around itself, by behaving as it does. A mobile does it. That's why I have one over there." I pointed, raising my arm, and as though by command a breeze came through the open window and stirred hanging metal panels in the half-shadowed far corner of the room. They squeaked a little as they turned. I'd been too busy to drop oil on the bearings lately.

I was frowning, and the frown was knotting my forehead muscles, and it was going to make my head ache, but I couldn't prevent myself.

"There must be a total interrelationship between the organism and its environment, including especially its fellow-organisms. Self-recognition was one of the first things they stumbled across in building mechanical simulacra of living creatures. They didn't plan

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for it. They built mechanical tortoises with little lights on top and a simple light-seeking urge, and if you showed this beast to a mirror, it would seem to recognize itself... This is the path, not the deliberate step-by-step piecing together of a man, but the attempt to define the same shape as that which the man himself defines in reacting with other people.

"Plain enough, that. But are you to process a trillion bits of information, store them, label them in time, translate them back for reproduction as — well, as what? I can't think of anything. What you want is..."

I shrugged, emptied my glass, and stood up. "You want the Cooper Effect," I finished. "Here — take this."

From the little rack on top of my machine I took a flat translucent disk about the size of a penny. To handle it I used a key which plugged into a hole in the center so accurately that it held the weight by simple friction. I held it out to Naomi.

My voice shook, because this was the first random test I had ever made.

"Take hold of this. Handle it. Rub your fingers over it, squeeze it gently on the flat sides, close your hand on it."

She obeyed. While it was in her hand, she looked at me.

"What is it?"

"It's an artificial piezo-electric crystal. All right, that should be enough. Put it back on the key — I don't want to confuse the readings by touching it myself."

It wasn't easy to slip the disk back on the key, and she made two false attempts before catching my hand to steady it. I felt a vibration coming through her fingers, as though her whole body were singing like a musical instrument.

"There," she said neutrally.

I carried the disk back to the machine. Gingerly I transferred it from the key to the little post on the top of the reader. It slid down like a record dropping to a turntable. A moment or two during which I didn't breathe.

Then there was the reaction.

I studied the readings on the dials carefully. Not perfect. I was a little disappointed — I'd hoped for a perfect run this first time. Nonetheless, it was extraordinarily close, considering she had handled the disk for a bare ten seconds.

I said, "The machine tells me that you are female, slim, fair-haired and probably blue-eyed, potentially artistic, unaccustomed to manual labor, IQ in the range of —"

Her voice cut across mine like the lash of a whip. "How? How do I know the machine tells you this, not your own eyes?"

I didn't look up. I said, "The machine is telling me what changes were brought about in that little crystal disk when you touched it. I'm reading it as a kind of graph, if you like — looking across the pattern of the dials and interpreting them into words."

"Does it tell you anything else?"

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"Yes. But it must be in error somewhere, I'm afraid. The calibration has been rather makeshift, and would have to be completed with a proper statistical sample of say a thousand people from all walks of life." I forced a laugh as I turned away from the machine. "You see, it says that you're forty-eight to fifty years old, and this is ridiculous on the face of it."

She sat very still. I had moved all the way to the table beside her, intending to refill my glass, before I realized how still. My hand on the bottle's neck, I stared at her.

"Is something wrong?"

She shook herself and came back to life instantly. She said lightly, "No. No, nothing at all. Derek, you are the most amazing man in the world. I shall be fifty years old next week."

"You're — joking." I licked my lips. I'd have said . . . oh, thirty-five, and childless, and extremely careful of her looks. But not a day more.

A trace of bitterness crossed her face as she nodded.

"It's true. I wanted to be beautiful — I don't think I have to explain why. I wanted to go on being beautiful because it was the only gift I could give to someone who had, as I have, everything he could conceivably want. So I — I saw to it."

"What happened to him?"

"I would prefer you not to know." The answer was cool and final. She relaxed deliberately, stretching her legs out before her, and gave a lazy smile. Her foot touched something on the floor as she moved, and she glanced down.

"What — ? Oh, that!" She reached for the soft leather wallet, which had fallen from her lap when she stood up, after I tossed it back at her. Holding it out, she said, "Take it, Derek. I know you've already earned it. By accident — by mistake — whatever you call it, you've proved that you can do what I was hoping for."

I did take it. But I didn't pocket it at first; I kept it in my hands, absently turning it over.

I said, "I'm not so sure, Naomi. Listen." I picked up my newly filled glass and returned to the chair facing her. "What I ultimately envisage is being able to deduce the individual from the traces he makes. You know that. That was the dream I told to Roger Gurney. But between now and then, between the simple superficial analysis of a specially prepared material and going over, piece by piece, ten thousand objects affected not merely by the individual in question but by many others, some of whom probably cannot be found in order to identify and rule out their extraneous influence — and *then* processing the results to make a coherent whole, there may be years, decades, of work and study, a thousand false trails, a thousand preliminary experiments with animals . . . Whole new techniques will have to be invented in order to employ the data produced! Assuming you have your — your analogue of a man: what are you going to

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do with it? Are you going to try and *make* a man, artificially, that fits the specifications?"

"Yes."

The simple word left me literally gasping; it was like a blow to the stomach, driving my breath away. She bent her brilliant gaze on me and once more smiled faintly.

"Don't worry, Derek. That's not your job. Work has been going on in many places for a long time — they tell me — on that problem. What nobody except yourself was doing was struggling with the problem of the total person."

I couldn't reply. She filled her own glass again before continuing, in a tenser voice:

"There's a question I've got to put to you, Derek. It's so crucial I'm afraid to hear the answer. But I can't endure to wait any longer, either. I want to know how long you think it will be before I can have what I want. Assume—remember that you've *got* to assume—the best men in the world can be set to work on the subsidiary problems; they'll probably make their reputations, they'll certainly make their fortunes. I want to hear what you think."

I said thickly, "Well, I find that pretty difficult! I've already mentioned the problem of isolating the traces from —"

"This man lived a different kind of existence from you, Derek. If you'd stop and think for a second, you'd guess that. I can take you to a place that was uniquely *his*, where his personality formed and molded and affected every grain of dust. Not a city where a million people have walked, not a house where a dozen unknown families have lived."

It had to be true, incredible though I would have thought it a scant hour ago. I nodded.

"That's good. Well, I shall also have to work out ways of handling unprepared materials — calibrate the properties of every single substance. And there's the risk that the passage of time will have overlaid the traces with molecular noise and random movement. Moreover, the testing itself, before the actual readings could register, might disturb the traces."

"You are to assume—" she forced patience on the repetition — "that the best men in the world are going to tackle the side issues."

"It isn't a side issue, Naomi." I wished I didn't have to be honest. She was hurt by my insistence, and I was beginning to think that, for all the things one might envy her, she had been hurt very badly already. "It's simply a fact one has to face."

She drank down her wine and replaced the glass on the table. Musingly she said, "I guess it would be true to say that the — the object which a person affects most, and most directly, is his or her own body. If just handling your little disk reveals so much, how much more must be revealed by the hands themselves, the lips, the eyes!"

I said uncomfortably, "Yes, of course. But it's hardly practicable to process a human body."

She said, "I have his body."

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II

This silence was a dreadful one. A stupid beetle, fat as a bullet, was battering its head on the shade of the lamp in the porch, and other insects were droning too, and there was the sea distantly heard. The silence, nonetheless, was graveyard-deep.

But she went on at last. "Everything that could possibly be preserved is preserved, by every means that could be found. I had —" Her voice broke for a second. "I had it prepared. Only the thing which is *he*, the web in the brain, the little currents died. Curious that a person is so fragile." Briskening, she launched her question anew.

"Derek, how long?"

I bit my lip and stared down at the floor by my feet. My mind churned as it considered, discarded relevant factors, envisaged problems, assumed them to be soluble, fined down everything to the simple irreducible of *time*. I might have said ten years, and felt that I was being stupidly optimistic.

But in the end, I said nothing at all.

She waited. Then, quite unexpectedly she gave a bright laugh and jumped to her feet. "Derek, it isn't fair!" she said. "You've achieved something fantastic, you want and deserve to relax and celebrate, and here I am plaguing you with questions and wanting answers out of the air. I know perfectly well that you're too honest to give me an estimate without time to think, maybe do a few calculations. And I'm keeping you shut up in your crowded room when probably what you most want is to get out of it for a while. Am I right?"

She put her hand out, her arm quite straight, as if to pull me from my chair. Her face was alight with what seemed pure pleasure, and to see it was to experience again the shock of hearing her say she was fifty years old. She looked — I can only say transformed. She looked like a girl at her first party.

But it lasted only a moment, this transformation. Her expression became grave and calm. She said, "I am sorry, Derek. I — I hate one thing about love. Have you ever thought how selfish it can make you?"

We wandered out of the house hand in hand, into the summer dark. There was a narrow slice of moon and the stars were like fierce hard lanterns. For the more-than-hundredth time I walked down the narrow ill-paved street leading from my temporary home towards the harbor; there was Conrad's house, and there was the grocery and wine-shop; there was the church, its roof silvered by the moon; there were the little cottages all in a row facing the sea, where the families of fisherfolk lived. And here, abandoned, was the detritus of two hundred and seventy lives which had never actually existed — conjured up to order.

I said, when we had walked all the way to the quay, "Naomi, it's beyond belief, even though I know it's true. This village wasn't a sham,

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a showplace. It was real. I *know* it."

She looked around her. "Yes. It was intended to be real. But all it takes is thought and patience."

"What did you say? Did you tell — whoever it was — 'Go and build a real village'?"

"I didn't have to. They knew. Does it interest you, how it was done?" She turned a curious face to me, which I could barely see in the thin light.

"Of course," I said. "My God! To create real people and a real place — when I'm ordered to re-create a real person — should I not be interested?"

"If it were as easy to re-create as it is to create," she said emptily, "I would not be . . . lonely."

We stopped, close by the low stone wall which ran from the quay to the sharp rocks of the little headland sheltering the beach, and leaned on it. At our backs, the row of little houses; before us, nothing but the sea. She was resting on both her elbows, staring over the water. At less than arm's reach, I leaned on one elbow, my hands clasped before me, studying her as though I had never seen her before tonight. Of course, I hadn't.

I said, "Are you afraid of not being beautiful forever?"

She shrugged. "There is no such wored as 'forever' — is there?"

"You make it seem as though there were."

"No, no." She chuckled. "Thank you for saying it, Derek. Even if I know — even if I can see in the mirror — that I am still so, it's delightful to be reassured."

How had she achieved it, anyway? I wanted, and yet didn't want, to ask. Perhaps she didn't know. She had just said she wanted it so, and it was. So I asked a different question.

"Because it's the thing that is most *yours?"*

Her eyes came back from the sea, rested on me, returned. "Yes. The *only* thing that is mine. You're a rare person; you have compassion. Thank you."

"How do you live?" I said. I fumbled out cigarettes from my pocket, rather crumpled. She refused one with a headshake, but I lit one for myself.

"How do I live?" she echoed. "Oh — many ways. As various people, of course, with various names. You see, I haven't even a name to call my own. Two women who look exactly like me exist for me, so that when I wish I can take their places in Switzerland, or in Sweden or South America. I borrow their lives, use them a while, give them back. I have seen them grow old, changed them for replacements — made into duplicates of me. But those are not persons, they are masks. I live behind masks. I suppose that's what you'd say."

"You can't do anything else," I said.

"No. No, of course I can't. And until this overtook me, I'd never conceived that I might want to."

I felt that I understood that. I tapped the first ash off my cigarette down towards the sea. Glancing around, I said irrelevantly, "You know, it seems like a shame

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to dismantle Santadora. It could be a charming little village. A real one, not a stage set."

"No," she said. And then, as she straightened and whirled around, "No! Look!" She ran forward into the middle of the narrow street and pointed at the cobbles. "Don't you see? Already stones which weren't cracked, are cracked! And the houses!" She flung up her arm and ran forward to the door of the nearest house. "The wood is warping! And that shutter — hanging loose on the hinges! And the step!" She dropped to her knees, felt along the low stone step giving directly on the street.

I was coming after her now, startled by her passion.

"Feel!" she commanded. "Feel it! It's been worn by people walking on it. And even the wall — don't you see the crack from the corner of the window is getting wider?" Again she was on her feet, running her hand over the rough wall. "Time is gnawing at it, like a dog at a bone. God, no, Derek! Am I to leave it and know that time is breaking it, breaking it, *breaking* it?"

I couldn't find words.

"Listen!" she said. "Oh, God! Listen!" She had tensed like a frightened deer, head cocked.

"I don't hear anything," I said. I had to swallow hard.

"Like nails being driven into a coffin," she said. She was at the house-door, battering on it, pushing at it. "You *must* hear it!"

Now, I did. From within the house there was a ticking noise — a huge, majestic, slow rhythm, so faint I had not noticed it until she commanded me to strain my ears. A clock. Just a clock.

Alarmed at her frenzy, I caught her by the shoulder. She turned and clung to me like a tearful child, burying her head against my chest. "I can't stand it," she said, her teeth set. I could feel her trembling.

"Come away," I murmured. "If it hurts you so much, come away."

"No, that isn't what I want. I'd go on hearing it. Don't you understand?" She drew back a little and looked up at me. "I'd go on hearing it!" Her eyes grew veiled, her whole attention focusing towards the clock inside the house. "Tick — tick — tick. It's like being buried alive!"

I hesitated a moment. Then I said, "All right, I'll fix it. Stand back."

She obeyed. I raised my foot and stamped it, sole and heel together, on the door. Something cracked. My leg stung all the way to the thigh with the impact. I did it again, and the jamb split. The door flew open. At once the ticking was loud and clear.

And visible in a shaft of moonlight opposite the door was the clock itself: a tall old grandfather, bigger than me, its pendulum glinting on every ponderous swing.

A snatch of an ancient and macabre spiritual came to my mind: *The hammer keeps ringing on somebody's coffin...*

Abruptly it was as doom-laden for me as for Naomi. I strode

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across the room, tugged open the glass door of the clock and stopped the pendulum. The silence was a relief like cold water after long thirst.

She came warily into the room after me, staring at the face of the clock as though hypnotized. It struck me that she was not wearing a watch. I had never seen her wear one.

"Get rid of it," she said. She was still trembling. "Please, Derek, get rid of it."

I whistled, taking another look at the old monster. I said, "That's not going to be so easy! These clocks are heavy!"

"*Please,* Derek!" The urgency in her voice was frightening. She turned her back, staring into a corner of the room. Like all these cramped, imitation-antique houses, this one had a mere three rooms. The room we were in was crowded with furniture — a big bed, a table, chairs, a chest. But for that, I felt she would have run to the corner to hide.

Well, I could try.

I studied the problem, and came to the conclusion that it would be best to take it in parts.

"Is there a lamp?" I said. "I'd work better if I could see?"

She murmured something inaudible; then there was the sound of a lighter, and a yellow flicker grew to a steady glow which illumined the room. The smell of paraffin reached my nostrils. She put the lamp on a table where its light fell past me on to the clock.

I unhitched the weights and pocketed them. Then I unclipped a screwdriver from my breast pocket and attacked the screws at the corners of the face. As I had hoped, with those gone it was possible to lift out the whole works, the chains following like umbilical cords, making little scraping sounds as they were dragged over the wooden ledge the movement had rested on.

"Here!" Naomi whispered, and snatched it from me. It was a surprisingly small proportion of the weight of the whole clock. She dashed out of the house and across the street. A moment, and there was a splash.

I felt a spasm of regret. And then was angry with myself. Quite likely this was no rare specimen of antique craftsmanship, but a fake. Like the whole village. I hugged the case to me and began to walk it on its front corners towards the door. I had been working with my cigarette in my mouth; now the smoke began to tease my eyes, and I spat it to the floor and ground it out.

Somehow I got the case out of the house, across the road, up on the sea-wall. I rested there for a second, wiping the sweat from my face, then got behind the thing and gave it the most violent push I could manage. It went over the wall, twisting once in the air, and splashed.

I looked down, and instantly wished that I hadn't. It looked exactly like a dark coffin floating off into the sea.

But I stayed there for a minute

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or so, unable to withdraw my gaze, because of an overwhelming impression that I had done some symbolic act, possessed of a meaning which could not be defined in logical terms, yet heavy, solid — real as that mass of wood drifting away.

I came back slowly, shaking my head, and found myself in the door of the house before I paid attention again to what was before my eyes. Then I stopped dead, one foot on the step which Naomi had cursed for being worn by passing feet. The flame of the yellow lamp was wavering a little in the wind. It was too high. The smell of its smoke was strong, and the chimney was darkening.

Slowly, as though relishing each single movement, Naomi was unbuttoning the black shirt she wore, looking toward the lamp. She tugged it out of the waist of her pants and slipped it off. The brassiere she wore under it was black too. I saw she had kicked away her espadrilles.

"Call it an act of defiance," she said in a musing tone — speaking more to herself, I thought, than to me. "I shall put off my mourning clothes." She unzipped her pants and let them fall. Her briefs also were black.

"Now I'm through with mourning. I believe it will be done. It will be done soon enough. Oh, yes! Soon enough." Her slim golden arms reached up behind her back. She dropped the brassiere to the floor, but the last garment she caught up in her hand and hurled at the wall. For a moment she stood still; then seemed to become aware of my presence for the first time and turned slowly towards me.

"Am I beautiful?" she said.

My throat was very dry. I said, "You're the most beautiful woman I've ever seen."

She leaned over the lamp and blew it out. In the instant of falling darkness she said, "Show me."

And, a little later on the rough blanket of the bed, when I had said twice or three times, "Naomi — Naomi!" she spoke again. Her voice was cold and far away.

"I didn't mean to call myself Naomi. What I had in mind was Niobe, but I couldn't remember it."

And very much later, when she had drawn herself so close to me that it seemed she was clinging to comfort, to existence itself, with her arms around me and her legs locked with mine, under the blanket now because the night was cold, I felt her lips move against my ear.

"How long, Derek?"

I was almost lost; I had never before been so drained of myself, as though I had been cork-tossed on a stormy ocean and battered limp by rocks. I could barely open my eyes. I said in a blurred voice, "What?"

"How long?"

I fought a last statement from my wearying mind, neither knowing nor caring what it was. "With luck," I muttered, "it might not take ten years. Naomi, I don't know —" And in a burst of absolute effort, finished, "My God, you do this to me and expect me to be able to think afterwards?"

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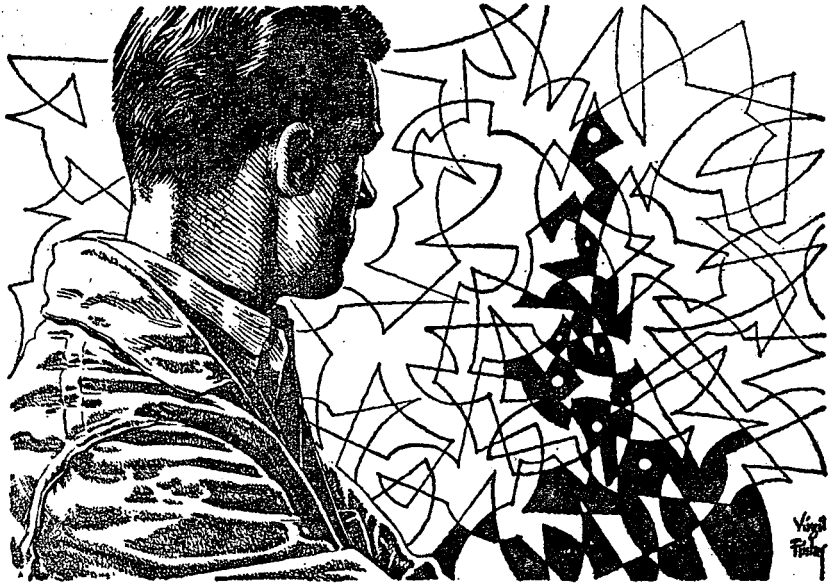

IV

But that was the extraordinary thing. I had imagined myself about to go down into blackness, into coma, to sleep like a corpse. Instead, while my body rested, my mind rose to the pitch beyond consciousness—to a vantage point where it could survey the future. I was aware of the thing I had done. From my crude experimental machine, I knew, would come a second and a third, and the third would be sufficient for the task. I saw and recognized the associated problems, and knew them to be soluble. I conceived names of men I wanted to work on those problems — some who were known to me, and given the chance I had been given could create, in their various fields, such new techniques as I had done. Meshing like hand-matched cogs, the parts blended into the whole.

A calendar and a clock were in my mind all this while.

Not all of this was a dream. Much of it was of the nature of inspiration, with the sole difference that I could feel it happening and that it was right. But toward the very end, I did have a dream — not in visual images, but in a kind of emotional aura. I had a completely satisfying sensation, which derived from the fact that I was about to meet for the first time a man who was already my closest friend, whom I knew as minutely as any human being had ever known another.

I was waking. For a little while longer I wanted to bask in that fan-

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tastic warmth of emotion; I struggled not to wake, while feeling that I was smiling and had been smiling for so long that my cheek-muscles were cramped.

Also I had been crying, so that the pillow was damp.

I turned on my side and reached out gently for Naomi, already phrasing the wonderful gift-words I had for her. "Naomi! I know how long it will take now. It needn't take more than three years. Perhaps as little as two and a half."

My hand, meeting nothing but the rough cloth, sought further. Then I opened my eyes and sat up with a start.

I was alone.

Full daylight was pouring into the room. It was bright and sunny and very warm. Where was she? I must go in search of her and tell her the wonderful news.

My clothes were on the floor by the bed. I pulled them on, thrust my feet in my sandals and padded to the door, pausing with one hand on the split jamb to accustom my eyes to the glare.

Just across the narrow street, leaning his elbows on the stone wall, was a man with his back to me. He gave not the slightest hint that he was aware of being watched. It was a man I knew at once, even though I'd met him no more than twice in my life. He called himself Roger Gurney.

I spoke his name, and he didn't turn around. He lifted one arm and made a kind of beckoning motion. I was sure then what had happened. but I walked forward to stand beside him, waiting for him to tell me.

Still he didn't look at me. He merely gestured toward the sharp rocks with which the end of the wall united. He said, "She came out at dawn and went up there. To the top. She was carrying her clothes in her hand. She threw them one by one into the sea. And then — " He turned his hand over, palm down, as though pouring away a little pile of sand.

I tried to say something, but my throat was choked.

"She couldn't swim," Gurney added after a moment. "Of course."

Now I could speak. I said, "But my God! Did you see it happen?"

He nodded.

"Didn't you go after her? Didn't you rescue her?"

"We recovered her body."

"Then — artificial respiration! You must have been able to do something!"

"She lost her race against time," Gurney said after a pause. "She had admitted it."

"I — " I checked myself. It was becoming so clear that I cursed myself for a fool. Slowly I went on, "How much longer would she have been beautiful?"

"Yes." He expressed the word with form. "That was the thing she was running from. She wanted *him* to return and find her still lovely, and no one in the world would promise her more than another three years. After that, the doctors say, she would have — " he made an empty gesture—"crumbled."

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"She would always have been beautiful," I said. "My God! Even looking her real age, she'd have been beautiful!"

"We think so," Gurney said.

"And so stupid, so futile!" I slammed my fist into my palm. "You too, Gurney. Do you realize what you've done, you fool?" My voice shook with anger, and for the first time he faced me.

"Why in hell didn't you revive her and send for me? It needn't have taken more than three years! Last night she demanded an answer and I told her ten. But it came clear to me during the night how it could be done in less than three!"

"I thought that was how it must have been." His face was white, but the tips of his ears were — absurdly — brilliant pink. "If you hadn't said that, Cooper; if you hadn't said that."

And then (I was still that wave-tossed cork, up one moment, down the next, up again the next) it came to me what my inspiration of the night really implied. I clapped my hand to my forehead.

"Idiot!" I said. "I don't know what I'm doing yet! Look, you have her body! Get it to — to wherever it is, with the other one, *quick*. What the hell else have I been doing but working to re-create a human being? And now I've seen how it can be done, I can do it. I can re-create her as well as him!" I was in a fever of excitement, having darted forward in my mind to that strange future I had visited in my sleep, and my barely-visualized theories were solid fact.

He was regarding me strangely. I thought he hadn't understood. I went on, "What are you standing there for? I can do it, I tell you. I've seen how it can be done. It's going to take men and money, but those can be got."

"No," Gurney said.

"What?" I let my arms fall to my sides, blinking in the sunlight.

"No," he repeated. He stood up, stretching arms cramped by long resting on the rough top of the wall. "You see, it isn't hers any longer. Now she's dead, it belongs to somebody else."

Dazed, I drew back a pace. I said, "Who?"

"How can I tell you? And what would it mean to you if I did? You ought by now to know what kind of people you're dealing with."

I put my hand in my pocket, feeling for my cigarettes. I was trying to make it come clear to myself. Now Naomi was dead she no longer controlled the resources which could bring her back.

So my dream was — a dream.

I was staring stupidly at the thing which had met my hand. It wasn't cigarettes. It was the leather wallet she had given me.

"You can keep that," Gurney said. "I was told you could keep it."

I looked at him. And I *knew*.

Very slowly I unzipped the wallet. I took out the three cards. They were sealed in plastic. I folded them in half, and the plastic cracked. I tore them across and let them fall to the ground. Then, one by one, I ripped the checks out of the book

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and let them drift confetti-wise over the wall, down to the sea that crashed over the rocks.

He watched me, the color coming to his face until at last he was flushing red — with guilt, shame, I don't know. When I had finished, he said in a voice that was still level, "You're a fool, Cooper. You could still have bought your dreams with those."

I threw the wallet in his face and turned away. I had gone ten steps, blind with anger and sorrow, when I heard him speak my name and looked back. He was holding the wallet in both hands, and his mouth was working.

He said, "Damn you, Cooper. I — I told myself I loved her, and I couldn't have done that. Why do you want to make me feel so *dirty*?"

"Because you are," I said. "And now you know it."

Three men I hadn't seen before came into my house as I was crating the machine. Silent as ghosts, impersonal as robots, they helped me put my belongings in my car. I welcomed their aid simply because I wanted to get to hell out of this mock village as fast as possible. I told them to throw the things I wanted to take with me all anyhow in the passenger seats and the luggage compartment, without bothering to pack cases. While I was at it, I saw Gurney come to the side of the house and stand by the car as though trying to pluck up courage to speak to me again. I ignored him. When I went out he had gone. I didn't find the wallet until I was in Barcelona sorting through the jumbled belongings. It held, this time, thirty-five thousand pesetas in new notes. He had just thrown it on the back seat under a pile of clothes.

Listen. It wasn't a *long* span of time which defeated Naomi. It wasn't three years, or ten years, or any number of years. I worked it out later — too late. (So time defeated me, too, as it always defeats us.)

I don't know how her man died. But I'm sure I know why she wanted him back. Not because she loved him, as she herself believed, but because he loved her; and without him she was afraid. It didn't need three years to re-create her. It didn't even need three hours. It needed *three words*.

And Gurney, the bastard, could have spoken them, long before I could — so long before that there was still time. He could have said, "I love you."

These are the totally rich. They inhabit the same planet; breathe the same air. But they are becoming, little by little, a different species, because what was most human in them is — well, this is my opinion — dead.

They keep apart, as I mentioned. And God! Aren't you grateful?

END

★ ★ ★ ★

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CAKEWALK TO GLORYANNA

BY L. J. STECHER, JR.

The job was easy. The profit was enormous. The only trouble was—the cargo had a will of its own!

Captain Hannah climbed painfully down from the *Delta Crucis,* hobbled across the spaceport to where Beulah and I were waiting to greet him and hit me in the eye. Beulah—that's his elephant, but I have to take care of her for him because Beulah's baby belongs to me and Beulah has to take care of it—kept us apart until we both cooled down a little. Then, although still somewhat dubious about it, she let us go together across the field to the spaceport bar.

I didn't ask Captain Hannah why he had socked me.

Although he has never been a handsome man, he usually has the weathered and austere dignity that comes from plying the remote reaches among the stars. Call it the Look of Eagles. Captain Hannah had lost the Look of Eagles. His eyes were swollen almost shut; every inch of him that showed was a red mass of welts piled on more welts, as though he had tangled with a hive of misanthropic bees. The gold-braided hat of his trade was not clamped in its usual belligerent position slightly over one eye. It was riding high on his head, apparently held up by more of the ubiquitous swellings.

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I figured that he figured that I had something to do with the way he looked.

"Shipping marocca to Gloryanna III didn't turn out to be a cakewalk after all?" I suggested.

He glared at me in silence.

"Perhaps you would like a drink first, and then you would be willing to tell me about it?"

I decided that his wince was intended for a nod, and ordered rhial. I only drink rhial when I've been exposed to Captain Hannah. It was almost a pleasure to think that *I* was responsible, for a change, for having *him* take the therapy.

"A *Delta* Class freighter can carry almost anything," he said at last, in a travesty of his usual forceful voice. "But some things it should never try."

He lapsed back into silence after this uncharacteristic admission. I almost felt sorry for him, but just then Beulah came racking across the field with her two-ton infant in tow, to show her off to Hannah. I walled off my pity. He had foisted those two maudlin mastodons off onto me in one of our earlier deals, and if I had somehow been responsible for his present troubles, it was no more than he deserved. I rated winning for once.

"You *did* succeed in getting the marocca to Gloryanna III?" I asked anxiously, after the elephants had been admired and sent back home. The success of that venture—even if the job had turned out to be more difficult than we had expected—meant an enormous profit to both of us. The fruit of the marocca is delicious and fabulously expensive. The plant grew only on the single planet Mypore II. Transshipped seeds invariably failed to germinate, which explained its rarity.

The Myporians were usually, and understandably, bitterly, opposed to letting any of the living plants get shipped off their planet. But when I offered them a sizable piece of cash plus a perpetual share of the profits for letting us take a load of marocca plants to Gloryanna III, they relented and, for the first time in history, gave their assent. In fact, they had seemed delighted.

"I got them there safely," said Captain Hannah.

"And they are growing all right?" I persisted.

"When I left, marocca was growing like mad," said Captain Hannah.

I relaxed and leaned back in my chair. I no longer felt the need of rhial for myself. "Tell me about it," I suggested.

"It was you who said that we should carry those damn plants to Gloryanna III," he said balefully. "I ought to black your other eye."

"Simmer down and have some more rhial," I told him. "Sure I get the credit for that. Gloryanna III is almost a twin to Mypore II. You know that marocca takes a very special kind of environment. Bright sun most of the time—that means an almost cloudless environment. A very equable climate. Days and nights the same length and no seasons—that means no ecliptical and no axial tilt. But our tests showed that the plants had enough tolerance to cause no

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trouble in the trip in *Delta Crucis.*" A light dawned. "Our tests were no good?"

"Your tests were no good," agreed the captain with feeling. "I'll tell you about it first, and *then* I'll black your other eye," he decided.

"You'll remember that I warned you that we should take some marocca out into space and solve any problems we might find before committing ourselves to hauling a full load of it?" asked Captain Hannah.

"We couldn't," I protested. "The Myporians gave us a deadline. If we had gone through all of that rigamarole, we would have lost the franchise. Besides, they gave you full written instructions about what to do under all possible circumstances."

"Sure. Written in Myporian. A very difficult language to translate. Especially when you're barricaded in the head."

I almost asked him why he had been barricaded in the bathroom of the *Delta Crucis,* but I figured it was safer to let him tell me in his own way, in his own time.

"Well," he said, "I got into parking orbit around Mypore without any trouble. The plastic film kept the water in the hydroponic tanks without any trouble, even in a no-gravity condition. And by the time I had lined up for Gloryanna and Jumped, I figured, like you said, that the trip would be a cakewalk.

"Do you remember how the plants always keep their leaves facing the sun? They twist on their stems all day, and then they go on twisting them all night, still pointing at the underground sun, so that they're aimed right at sunrise. So the stem looks like a corkscrew?"

I nodded. "Sure. That's why they can't stand an axial tilt. They 'remember' the rate and direction of movement, and keep it up during the night time. So what? We had that problem all figured out."

"You think so? That solution was one of yours, too, wasn't it?" He gazed moodily at his beaker of rhial. "I must admit it sounded good to me, too. In Limbo, moving at multiple light-speeds, the whole Universe, of course, turns into a bright glowing spot in our direction of motion, with everything else dark. So I lined up the *Delta Crucis* perpendicular to her direction of motion, put a once-every-twenty-one hour spin on her to match the rotation rates of Mypore II and Gloryanna III, and uncovered the view ports to let in the light. It gradually brightened until 'noon time', with the ports pointing straight at the light source, and then dimmed until we had ten and one-half hours of darkness.

"Of course, it didn't work."

"For Heaven's sake, why not?"

"For Heaven's sake why should it? With no gravity for reference, how were the plants supposed to know that the 'sun' was supposed to be moving?"

"So what did you do?" I asked, when that had sunk in. "If the stem doesn't keep winding, the plants die; and they can only take a few extra hours of night time before they run down."

"Oh," said Captain Hannah in quiet tones of controlled desperation, "it was very simple. I just put

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enough spin on the ship to make artificial gravity, and then I strung a light and moved it every fifteen minutes for ten and one-half hours, until I had gone halfway around the room. Then I could turn the light off and rest for ten and one-half hours. The plants liked it fine.

"Of course, first I had to move all the hydroponic tanks from their original positions perpendicular to the axial thrust line of the ship to a radial position. And because somehow we had picked up half of the plants in the northern hemisphere of Mypore and the other half in the southern hemisphere, it turned out that half of the plants had a sinistral corkscrew and the other half had a dextral. So I had to set the plants up in two different rooms, and run an artificial sun for each, going clockwise with one, widdershins with the other.

"I won't even talk about what I went through while I was shifting the hydroponic tanks, when all the plastic membranes that were supposed to keep the water in place started to break."

"I'd like to know," I said sincerely.

He stared at me in silence for a moment. "Well, it filled the cabin with great solid bubbles of water. Water bubbles will oscillate and wobble like soap bubbles," he went on dreamily, "but of course, they're not empty, like soap bubbles. The surface acts a little like a membrane, so that sometimes two of the things will touch and gently bounce apart without joining. But just try *touching* one of them. You could drown—I almost did. Several times.

"I got a fire pump—an empty one. You know the kind; a wide cylinder with a piston with a handle, and a hose that you squirt the water out of, or can suck water in with. The way you use it is, you float up on a big ball of water, with the pump piston down—closed. You carefully poke the end of the hose into the ball of water, letting only the metal tip touch. *Never* the hose. If you let the hose touch, the water runs up it and tries to drown you. Then you pull up on the piston, and draw all the water into the cylinder. Of course, you have to hold the pump with your feet while you pull the handle with your free hand."

"Did it work?" I asked eagerly.

"Eventually. Then I stopped to think of what to do with the water. It was full of minerals and manure and such, and I didn't want to introduce it into the ship's tanks."

"But you solved the problem?"

"In a sense," said the captain. "I just emptied the pump back into the air, ignored the bubbles, repositioned the tanks, put spin on the ship and then ladled the liquid back into the tanks with a bucket."

"Didn't you bump into a lot of the bubbles and get yourself dunked a good deal while you were working with the tanks?"

He shrugged. "I couldn't say. By that time I was ignoring them. It was that or suicide. I had begun to get the feeling that they were stalking me. So I drew a blank."

"Then after that you were all right, except for the tedium of moving the lights around?" I asked him.

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I answered myself at once. "No. There must be more. You haven't told me why you hid out in the bathroom, yet."

"Not yet," said Captain Hannah. "Like you, I figured I had the situation fairly well under control, but like you, I hadn't thought things through. The plastic membranes hadn't torn when we brought the tanks in board the *Delta Crucis*. It never occurred to me to hunt around for the reasons for the change. But I wouldn't have had long to hunt anyway, because in a few hours the reasons came looking for me.

"They were a tiny skeeter-like thing. A sort of midge or junior grade mosquito. They had apparently been swimming in the water during their larval stage. Instead of making cocoons for themselves, they snipped tiny little pieces of plastic to use as protective covers in the pupal stage. I guess they were more like butterflies than mosquitoes in their habits. And now they were mature.

"There were thousands and thousands of them, and each one of them made a tiny, maddening whine as it flew."

"And they bit? That explains your bumps?" I asked sympathetically.

"Oh, no. These things didn't bite, they itched. And they got down inside of everything they could get down inside, and clung. That included my ears and my eyes and my nose.

"I broke out a hand sprayer full of a DDT solution, and sprayed it around me to try to clear the nearby air a little, so that I could have room to think. The midges loved it. But the plants that were in reach died so fast that you could watch their leaves curl up and drop off.

"I couldn't figure whether to turn up the fans and dissipate the cloud—by spreading it all through the ship—or whether to try to block off the other plant room, and save it at least. So I ended up by not doing anything, which was the right thing to do. No more plants died from the DDT.

"So then I did a few experiments, and found that the regular poison spray in the ship's fumigation system worked just fine. It killed the bugs without doing the plants any harm at all. Of course, the fumigation system is designed to work with the fumigator off the ship, because it's poisonous to humans too.

"I finally blocked the vents and the door edges in the head, after running some remote controls into there, and then started the fumigation system going. While I was sitting there with nothing much to do, I tried to translate what I could of the Myporian instructions. It was on page eleven that it mentioned casually that the midges—the correct word is carolla—are a necessary part of the life cycle of the marocca. The larvae provide an enzyme without which the plants die.

"Of course. I immediately stopped slapping at the relatively few midges that had made their way into the head with me, and started to change the air in the ship to get rid of the poison. I knew it was too late

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before I started, and for once I was right.

"The only live midges left in the ship were the ones that had been with me during the fumigation process. I immediately tried to start a breeding ground for midges, but the midges didn't seem to want to cooperate. Whatever I tried to do, they came back to me. I was the only thing they seemed to love. I didn't dare bathe, or scratch, or even wriggle, for fear of killing more of them. And they kept on itching. It was just about unbearable, but I bore it for three interminable days while the midges died one by one. It was heartbreaking—at least, it was to me.

"And it was unnecessary, too. Because apparently the carolla had already laid their eggs, or whatever it is that they do, before I had fumigated them. After my useless days of agony, a new batch came swarming out. And this time there were a few of a much larger thing with them—something like an enormous moth. The new thing just blundered around aimlessly.

"I lit out for the head again, to keep away from that intolerable whining. This time I took a luxurious shower and got rid of most of the midges that came through the door with me. I felt almost comfortable, in fact, until I resumed my efforts to catch up on my reading.

"The mothlike things—they are called dingleburys—also turn out to provide a necessary enzyme. They are supposed to have the same timing of their life cycle as the carolla. Apparently the shaking up I had given their larvae in moving the tanks and dipping the water up in buckets and all that had inhibited them in completing their cycle the first time around.

"And the reason they had the same life cycle as the carolla was that the adult dingleburry will eat only the adult carolla, and it has to fill itself full to bursting before it will reproduce. If I had the translation done correctly, they were supposed to dart gracefully around, catching carolla on the wing and stuffing themselves happily.

"I had to find out what was wrong with my awkward dingleburys. And that, of course, meant going out into the ship again. But I had to do that anyway, because it was almost 'daylight', and time for me to start shifting the lights again.

"The reason for the dingleburys' problem is fairly obvious. When you set up artificial gravity by spinning a ship, the gravity is fine down near the skin where the plants are. But the gravity potential is very high, and it gets very light up where things fly around, going to zero on the middle line of the ship. And the unfamiliar gravity gradient, together with the Coriolis effect and all, makes the poor dingleburys dizzy, so they can't catch carolla.

"And if you think I figured all that out about dingleburys getting dizzy at the time, in that madhouse of a ship, then you're crazy. What happened was that I saw that there was one of the creatures that didn't seem to be having any trouble, but was acting like the book said it should. I caught it and examined it. The

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poor thing was blind, and was capturing her prey by sound alone.

"So I spent the whole day—along with my usual chore of shifting the lights — blindfolding dingleburys. Which is a hell of a sport for a man who is captain of his own ship."

I must say that I agreed with him, but it seemed to be a good time for me to keep my mouth shut.

"Well after the dingleburys had eaten and propagated, they became inquisitive. They explored the whole ship, going into places I wouldn't have believed it to be possible for them to reach, including the inside of the main computer, which promptly shorted out. I finally figured that one of the things had managed to crawl up the cooling air exhaust duct, against the flow of air, to see what was going on inside.

"I didn't dare to get rid of the things without checking my book, of course, so it was back to the head for me. 'Night' had come again—and it was the only place I could get any privacy. There were plenty of the carolla left to join me outside.

"I showered and swatted and started to read. I got as far as where it said that the dingleburys continued to be of importance, and then I'm afraid I fell asleep.

"I got up with the sun the next morning. Hell, I had to, considering that it was I who turned the sun on! I found that the dingleburys immediately got busy opening small buds on the stems of the marocca plants. Apparently they were pollinating them. I felt sure that these buds weren't the marocca blossoms from which the fruit formed—I'd seen a lot of those while we were on Mypore II and they were much bigger and showier than these little acorn-sized buds.

"Of course. I should have translated some more of my instruction book, but I was busy.

"Anyway, the action of the dingleburys triggered the violent growth phase of the marocca plants. Did you know that they plant marocca seedlings, back on Mypore II, *at least* a hundred feet apart? If you'll recall, a mature field, which was the only kind we ever saw, is one solid mass of green growth.

"The book says that it takes just six hours for a marocca field to shift from the seedling stage to the mature stage. It didn't seem that long. You could *watch* the stuff grow—groping and crawling along; one plant twining with another as they climbed toward the light.

"It was then that I began to get worried. If they twined around the light, they would keep me from moving it, and they would shadow it so it wouldn't do its job right. In effect, their growth would put out the sun.

"I thought of putting up an electrically charged fence around the light, but the bugs had put most of my loose equipment out of action, so I got a machete. When I took a swing at one of the vines, something bit me on the back of the neck, so hard it almost knocked me down. It was one of the dingleburys, and it was as mad as blazes. It seems that one of the things they do is to defend the marocca against marauders. That was the first of my welts,

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and it put me back in the head in about two seconds.

"And what's more, I found that I couldn't kill the damn things. Not if I wanted to save the plants. The growth only stops at the end of six hours, after the blossoms appear and are visited by the dingleburys. No dingleburys, no growth stoppage.

"So for the next several hours I had to keep moving those lights, and keep them clear of the vines, and keep the vines from shadowing each other to the point where they curled up and died, and I had to do it *gently*, surrounded by a bunch of worried dingleburys.

"Every time they got a little too worried, or I slipped and bumped into a plant too hard, or looked crosseyed at them, they bit me. If you think I look bad now, you should have seen me just about the time the blossoms started to burst.

"I was worried about those blossoms. I felt sure that they would smell terrible, or make me sick, or hypnotize me, or something. But they just turned out to be big, white, odorless flowers. They did nothing for me or to me. They drove the dingleburys wild, though, I'm happy to say. Made them forget all about me.

"While they were having their orgy, I caught up on my reading. It was necessary for me to cut back the marocca vines. For one thing, I couldn't get up to the area of the bridge. For another, the main computer was completely clogged. I could use the auxiliary, on the bridge, if I could get to it, but it's a poor substitute. For another thing, I would have to cut the stuff way back if I was ever going to get the plants out of the ship. And I was a little anxious to get my *Delta Crucis* back to normal as soon as possible. But before cutting, I had to translate the gouge.

"It turns out that it's all right to cut marocca as soon as it stops growing. To keep the plants from dying, though, you have to mulch the cuttings and then feed them back to the plants, where the roots store whatever they need against the time of the next explosive period of growth. Of course, if you prefer you can wait for the vines to die back naturally, which takes several months.

"There was one little catch, of course. The cuttings from the vines will poison the plants if they are fed back to them without having been mixed with a certain amount of processed mulch. Enzymes again. And there was only one special processor on board.

"I was the special processor. That's what the instructions said—I translated very carefully—it required an 'organic processor'.

"So I had to eat pounds of that horrible tasting stuff every day, and process it the hard way.

"I didn't even have time to scratch my bites. I must have lost weight everywhere but in the swollen places, and they looked worse than they do now. The doctor says it may take a year before the bumps all go away—if they ever do—but I have improved a lot already.

"For a while I must have been out of my head. I got so caught up

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in the rhythm of the thing that I didn't even notice when we slipped out of Limbo into real space near Gloryanna III. It was three days, the Control Tower on Gloryanna III told me, that they tried continuously to raise me on the communications gear before I heard the alarm bell and answered them, so I had to do a good deal of backtracking before I could get into parking orbit around the planet, and then set *Delto Crucis* down safely. Even as shaky as I was, *Delta Crucis* behaved like a lady.

"I hadn't chopped off all of the new growth, although I had the plants down to manageable size. Some of the blossoms left on the plants had formed fruit, and the fruit had ripened and dried, and the seeds had developed fully. They were popping and spreading fine dust-like spores all over the ship, those last few hours before I landed.

"By that time, though, an occasional sneezing fit and watering eyes didn't bother me any. I was far beyond the point where hay fever could add to my troubles.

"When I opened the airlock door, though, the spores drifting outside set the customs inspectors to sneezing and swearing more than seemed reasonable at the time." Captain Hannah inhaled a sip of rhial, and seemed to be enjoying the powerful stuff. He acted as if he thought he had finished.

"Well, go on," I urged him. "The marocca plants were still in good shape, weren't they?"

Hannah nodded. "They were growing luxuriously." He nodded his head a couple of more times, in spite of the discomfort it must have given him.

He said, "They made me burn the entire crop right away, of course. They didn't get all of the carolla or dingleburys, though. Or spores."

"Gloryanna III is the original home planet of marocca. They hated the stuff, of course, but they liked the profit. Then, when a plague almost wiped out the dingleburys, they introduced khorram furs as a cash crop. It wasn't as lucrative, but it was so much more pleasant that they outlawed marocca. Took them almost fifty years to stamp it out completely. Meanwhile, some clever native shipped a load of the stuff to Mypore II. He took his time, did it without any trouble and made his fortune. And got out again quickly.

"The Gloryannans were going to hold my *Delta Crucis* as security to pay for the cost of stamping out marocca all over again — those spores sprout fast—and for a time I was worried.

"Of course, when I showed them our contract—that you alone were responsible for everything once I landed the plants safely on Gloryanna III, they let me go.

"They'll send you the bill. They don't figure it will take them more than a few months to complete the job."

Captain Hannah stopped talking and stood up, painfully and a little unsteadily.

I'm afraid I didn't even notice when he blacked my other eye. I was too busy reaching for the rhial.

END

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PEOPLE OF THE SEA

CONCLUSION

BY ARTHUR C. CLARKE

ILLUSTRATED BY WOOD

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The dolphins sought Man's aid —but they were able to pay for the favors they needed!

PART TWO

XIII

For more than a hundred years Dolphin Island had been haunted by a legend. Johnny would have heard of it soon enough, but as it happened, he made the discovery by himself.

He had been taking a short-cut through the forest that covered three-quarters of the island, and, as usual, it turned out not to be short at all. Almost as soon as he left the path, he had lost his direction in the densely-packed pandanus and pisonia trees, and was floundering up to his knees in the sandy soil that the mutton-birds had riddled with their burrows.

It was a strange feeling, being 'lost' only a few hundred feet from the crowded settlement and all his friends. He could easily imagine that he was in the heart of some vast jungle, a thousand miles from civilization. There was all the loneliness and mystery of the untamed wild, with none of its danger — for if he pushed on in any direction, he would be out of the tiny forest in five minutes. True, he wouldn't come out in the place he had intended. But that hardly mattered on so small an island.

Suddenly he became aware of something odd about the patch of jungle into which he had blundered. The trees were smaller and further apart than elsewhere, and as he looked around him, Johnny slowly realized that this had once been a clearing in the forest. It must have been abandoned a long, long time ago, for it had become almost

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What Has Gone Before —

Johnny Clinton ran away to sea. The ship he stowed away on was a hovercraft, not an ocean vessel; but when it developed trouble in the middle of the Pacific it sank as readily as any surface craft. Abandoned by the crew, Johnny was aided to shore by dolphins. They towed his makeshift raft to an island where a project was underway for research into communication between men and dolphins. This was no accident. The dolphins knew what they were doing. Bringing Johnny to the island was an earnest of good faith, for they wanted to ask a favor of the human race: the extinction, or neutralization, of their ancient enemies, the killer whales. While this question was being debated Johnny explored his new island home in the company of the Maori lad, Mick.

completely overgrown. In a few more years, all trace of it would be lost.

Who could have lived here, he wondered, years before radio and aircraft had brought the Great Barrier Reef into contact with the world? Criminals? Pirates? All sorts of romantic ideas flashed through his mind, and he began to poke around among the roots of the trees to see what he could find.

He had become a little discouraged, and was wondering if he was simply imagining things, when he came across some smoke-blackened stones half covered by leaves and earth. A fireplace, he decided, and redoubled his efforts. Almost at once, he found some pieces of rusty iron, a cup that had lost its handle and a broken spoon.

That was all. It was not a very exciting treasure trove, but it did prove that civilized people, not savages, had been here long ago. No one would come to Dolphin Island, so far from land, merely to have a picnic. Whoever they were, they must have had a good reason.

Taking the spoon as a souvenir, Johnny left the clearing. Ten minutes later he was back on the beach. He went in search of Mick, whom he found in the classroom, nearing the end of Mathematics II, tape 23. As soon as Mick had finished, switched off the teaching machine and thumbed his nose at it, Johnny showed him the spoon

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and described where he had found it.

To his surprise, Mick seemed ill at ease.

"I wish you hadn't taken that," he said. "Better put it back."

"But why?" asked Johnny in amazement.

Mick was quite embarrassed. He scuffed his large, bare feet on the polished plastic floor and did not answer directly.

"Of course," he said, "I don't *really* believe in ghosts, but I'd hate to be there by myself on a dark night."

Johnny was now getting a little exasperated, but he knew that he'd have to let Mick tell the story in his own way. He began by taking Johnny to the Message Center, putting through a local call to the Brisbane Museum and speaking a few words to the Assistant Curator of the Queensland History Department.

A few seconds later, a strange object appeared on the vision screen. It was a small iron tank or cistern, about four feet square and two feet deep, standing in a glass display case. Beside it were two crude oars.

"What do you think *that* is?" asked Mick.

"It looks like a water tank to me," said Johnny.

"Yes," said Mick, "but it was a boat, too. And it sailed from this island a hundred and thirty years ago — with three people in it."

"*Three* people — in a thing that size!"

"Well, one was a baby. The grown-ups were an English-woman called Mary Watson, and her Chinese cook, whose name I don't remember—it was Ah Something... ."

As the strange story unfolded, Johnny was transported back in time to an age that he could scarcely imagine. Yet it was only 1881 — not yet a century and a half ago. There had been telephones and steam engines then, and Albert Einstein had already been born. But along the Great Barrier Reef, cannibals still paddled their war canoes.

Despite this, Captain Watson had set up his home on Dolphin Island. His business was collecting and selling sea-cucumbers or *beche-de-mer*—the ugly, sausage-like creatures that crawled sluggishly in every coral pool. The Chinese paid high prices for the dried skins, which they valued for medical purposes.

Soon, the island's supplies of *beche-de-mer* were exhausted, and the captain had to search further and further from home. He was away in his small ship for weeks at a time, leaving his young wife to look after the house and her new-born son, with the help of two Chinese servants.

It was while the captain was away that the savages landed. They killed one of the Chinese houseboys and seriously injured the other before Mary Watson drove them off with rifle and revolver. But she knew that they would return — and that her husband's ship would not be back for another month.

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The situation was desperate, but Mary Watson was a brave and resourceful woman. She decided to leave the island in a small iron tank used for boiling *beche-de-mer,* hoping that she would be picked up be one of the ships plying along the Reef.

She stocked her tiny, unstable craft with food and water and paddled away from her home. The houseboy was gravely injured, and could give her little help. Her four-month-old son must have needed constant attention. She had just one stroke of luck, without which the voyage would not have lasted ten minutes. The sea was perfectly calm.

The next day they grounded on a neighboring reef. They remained there for two days, hoping to see a boat. But no ships came in sight, so they pushed off again and eventually reached a small island, forty-two miles from their starting point.

And it was from this island that they saw a steamer going by. But no one on board noticed Mrs. Watson frantically waving her baby's shawl.

Now they had exhausted all their water, and there was none on the island. Yet they survived another four days, slowly dying of thirst, hoping for rains that never came and for ships that never appeared.

Three months later, quite by chance, a passing schooner sent men ashore to search for food.

Instead, they found the body of the Chinese cook and, hidden in the undergrowth, the iron tank. Huddled inside it was Mary Watson, with her baby son still in her arms. And beside her was the log of the eight-day voyage, which she had kept to the very end.

"I've seen it in the Museum," said Mick, very solemnly. "It's on half a dozen sheets of paper, torn out of a notebook. You can still read most of it, and I'll never forget the last entry. It just says: 'No water — nearly dead with thirst.'"

For a long time neither boy said anything. Then Johnny looked at the broken spoon he was still holding.

It was foolish, of course, but he *would* put it back, out of respect for Mary Watson's gallant ghost. He could understand the feelings of Mick and his people towards her memory. He wondered how often, on moonlit nights, the more imaginative islanders believed that they had seen a young woman pushing an iron box out to sea...

Then another, and much more disturbing, thought suddenly struck him. He turned towards Mick, wondering just how to put the question. But it was not necessary, for Mick answered without prompting.

"I feel pretty bad about the whole thing," he said, "even though it was such a long time ago. You see, I know for a fact that my grandfather's grandfather helped to eat the other Chinaman."

XIV

Every day now, Johnny and Mick would go swimming with the two dolphins, trying to find the limits of their intelligence and their

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cooperation. They now tolerated Mick and would obey his requests when he was using the communicator, but they remained unfriendly to him. Sometimes they would try to scare him, by charging him with teeth showing, then turning aside at the last possible moment. They never played such tricks with Johnny, though they would often nibble at his flippers or rub gently against him, expecting to be tickled and stroked in return.

This prejudice upset Mick, who couldn't see why Susie and Sputnik preferred, as he put it, "an undersized little pale-skin" like Johnny. But dolphins are as temperamental as human people. There is no accounting for tastes. Mick's opportunity was to come later, though in a way that no one could have guessed.

Despite occasional arguments and quarrels, the boys were now firm friends, and were seldom far apart. Mick was, indeed, the first really close friend that Johnny had ever made. There was good reason for this, though he did not know it. After losing both his parents, at such an early age, he had been afraid to risk his affections elsewhere. But now the break with his past was so complete that it had lost much of its power over him.

Besides, Mick was someone whom anybody could admire. Like most of the islanders, he had a splendid physique. Generations of sea-battling forefathers had made sure of that. He was alert and intelligent, and full of information about things of which Johnny had never heard. His faults were minor ones — rashness, exaggeration and a fondness for practical jokes, which sometimes got him into trouble.

Towards Johnny he felt protective, almost fatherly, as a big man can often be towards a much smaller one. And perhaps the warm-hearted island boy, with his four brothers, three sisters and scores of aunts, uncles, cousins, nephews and nieces, felt the inner loneliness of this runaway orphan from the other side of the world.

Ever since he had mastered the basic technique of diving, Johnny had been pestering Mick to take him exploring off the edge of the reef, where he could test his new skills in deep water and among big fish. But Mick had taken his time. Though he was impatient in small matters, he could be cautious in big ones. He knew that diving in a small, safe pool, or close to the jetty, was very different from operating in the open sea. So many things could go wrong. There were powerful currents, unexpected storms might spring up, sharks might make a nuisance of themselves. The sea was full of surprises, even for the most experienced diver. It was merciless to those who made mistakes. It did not give them a second chance.

Johnny's opportunity came in a way that he had not expected.

Susie and Sputnik were responsible. Professor Kazan had decided that it was time they went out into the world to earn their own livings. He never kept a pair of dolphins

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longer than a year, believing that it was not fair to do so. They were social creatures, and needed to make contact with their own kind. Most of his subjects, when he released them, remained close to the island and could always be called through the underwater loud-speakers. He was quite sure that Susie and Sputnik would behave in the same way.

In fact, they simply refused to leave.

When the gate of the pool was opened, they swam a little way down the channel leading into the sea, then darted back as if afraid that they would be shut outside.

"I know what's wrong," said Mick in disgust. "They're so used to being fed by us that they're too lazy to catch their own fish."

There might have been some truth in that, but it was not the whole explanation. For when Professor Kazan asked Johnny to swim down the channel, they followed him out to sea. He did not even have to press any of the buttons on the communicator.

After that, there was no more swimming in the deserted pool — for which, though no one knew it, Professor Kazan now had other purposes in mind. Every morning, immediately after their first session at school, Mick and Johnny would meet the two dolphins and head out to the reef. Usually they took Mick's surf-board with them, as a floating base on which they could load their gear and any fish that they caught.

Mick told a hair-raising tale of sitting on this same board while a tiger shark prowled around, trying to take a bite out of a 30-pound barracuda he'd shot and foolishly left dangling in the water. "If you want to live a long time on the Great Barrier Reef," he said, "get your speared fish out of the sea as quickly as you can. Australian sharks are the meanest in the world. They grab three or four divers every year."

That was nice to know; Johnny wondered how long it would take a shark to chew through the two inches of foam-and-fibreglass in Mick's board, if it really tried...

But with Susie and Sputnik as escorts, there was no danger from sharks. Indeed, they hardly ever saw one. The presence of the two dolphins gave them a wonderful sense of security, such as no diver in the open sea could ever have felt before. Sometimes Susie and Sputnik were joined by Einar and Peggy, and once a school of at least fifty dolphins accompanied them on one of their swims. This was too much of a good thing, for the water was so crowded that visibility was almost zero. But Johnny could not bring himself to hurt anyone's feelings by pressing the GO button.

He had swum often enough in the shallow pools on the great coral plateau round the island, but to dive off the reef's outer edge was a much more awe-inspiring experience. The water was sometimes so clear that Johnny felt he was floating in mid-air, with no means of support. He could look down and

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see absolutely nothing between himself and a jagged coral landscape forty feet below. He had to keep reminding himself that it was impossible to fall.

In some areas, the great fringing reef around the island ended sharply in an almost vertical wall of coral. It was fascinating to sink slowly down the face of this wall, surprising the gorgeously colored fish that lived in its cracks and recesses. At the end of a dive, Johnny would try to identify the most striking of the reef-butterflies in the institute's reference books; but he usually found that they had no popular names, only unpronounceable Latin ones.

Almost everywhere one might run into isolated boulders and pinnacles, rising suddenly out of the sea-bed and reaching almost to the surface. Mick called these "bommies," and sometimes they reminded Johnny of the carved rock formations in the Grand Canyon. These, however, had not been shaped by the forces of erosion. They had *grown* into their present forms, for they were the accumulated skeletons of countless coral animals. Only the thin surface was now alive, over a massive core of dead limestone weighing many tons, and ten or twenty feet high. When the underwater visibility was poor, as was sometimes the case after a storm or rain shower, it was startling to come across one of these stone monsters looming suddenly out of the mist.

Many of them were riddled with caves. These caves were always inhabited. It was not a good idea to enter them until you had discovered who was at home. It might be a moray eel, constantly snapping his hideous jaws; it might be a family of friendly but dangerous scorpion fish, waving their poison-tipped spines like a bundle of turkey feathers. If the cave was a large one, it would usually be a rock-cod or grouper. Some of these were much bigger than Johnny, but they were quite harmless and backed nervously away when he approached them.

In a surprisingly short time, he grew to recognize individual fish and to know where to find them. The groupers never strayed far. Johnny soon began to look on some of them as personal friends. One scarred veteran had a fishhook embedded in his lower lip, with a piece of line still hanging from it. Despite his unfortunate experience with mankind, he was not unfriendly, and even allowed Johnny to come close enough to stroke him

The groupers, the morays, the scorpion fish — these were the permanent residents of the submarine landscape that Johnny was beginning to know and love. But sometimes there would be unexpected and exciting visitors swimming in from deeper water. It was part of the reef's attraction that you never knew what you would meet on any given dive, even in an area that you had visited a dozen times before and knew like the proverbial back of your hand.

Sharks were, of course, the com-

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monest prowlers of the reef. Johnny never forgot the first he met, one day when he and Mick had given their escorts the slip by going out an hour earlier than usual. He never saw it coming. It was suddenly there, a gray, superbly streamlined torpedo moving slowly and effortlessly towards him. It was so beautiful,, so graceful that it was impossible to think of it as dangerous. Not until it had approached to within twenty feet did Johnny look round anxiously for Mick. He was relieved to find his friend snorkling immediately above him, eyeing the situation calmly but with loaded speargun at the ready.

The shark, like almost all sharks, was merely inquisitive. It looked Johnny over with its cold, staring eyes—so different from the friendly, intelligent eyes of the dolphins—and swerved off to the right when it was ten feet away. Johnny had a perfect view of the pilot fish swimming in front of its nose, and the remora or sucker fish clamped on to its back—an ocean-going hitchhiker, using his suction-pad to give him a free ride through life.

There was nothing that a diver could do about sharks, except to watch out for them and to leave them alone in the hope that they would do the same to him. If you faced up to them, they would always go away. But if you lost your nerve and tried to run — well, anyone who was stupid enough to run deserved little sympathy, for a shark could swim thirty m.p.h. to a skin-diver's three.

More unnerving than any sharks were the packs of barracuda that roamed along the edge of the reef. Johnny was very glad that the surfboard was floating overhead, the first time he discovered that the water around him was full of the silver sea-pike, with their hostile eyes and aggressive, underslung jaws. They were not very large — three feet long at the most — but there were hundreds of them. They formed a circular wall with Johnny at the center. It was a wall that came closer and closer, as the barracuda spiraled in to get a better look at him, until presently he could see nothing but their glittering bodies. Though he waved his arms and shouted into the water, it made not the slightest difference. They inspected him at their leisure — then, for no reason that he could see, turned suddenly away and disappeared into the blue.

Johnny surfaced, grabbed the board and held an anxious conference with Mick across it. Every few seconds he kept bobbing his head underwater, to see if the wolf-pack had returned.

"They won't bother you," said Mick reassuringly. " 'Cuda are cowards. If you shoot one, all the others will run away."

Johnny was glad to know it, and took the next meeting more calmly. All the same, he never felt quite happy when the silver hunters closed in on him, like a fleet of spaceships from an alien world. Perhaps some day, one of them would risk a nibble, and then the whole pack would move in...

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There was one serious difficulty about exploring the reef. It was *too* big. Most of it was far beyond comfortable swimming range, and there were areas out on the horizon that had never been visited. Often Johnny wished he could have gone further into unknown territory, but had been forced to save his strength for the long swim home. It was on one of these weary return journeys, as he helped Mick to push the surfboard loaded with at least a hundred pounds of fish, that the answer occurred to him.

Mick was skeptical, but agreed that the idea would be splendid — if it worked. "It's not going to be easy," he said, "to make a harness that will fit a dolphin. They're so well streamlined that it will slide off them."

"I'm thinking of a kind of elastic collar, just ahead of the flippers. If it's broad enough, and tight enough, it should stay on. Let's not talk about it, though. People will only laugh at us."

This was good advice, but impossible to carry out. Everyone wanted to know *why* they needed sponge rubber, elastic webbing, nylon cord and oddly shaped pieces of plastic, and they had to confess the truth. There was no hope of carrying out the first trials in secrecy. Johnny had an embarrassingly large audience when he fitted his harness onto Susie.

He ignored the jokes and suggestions from the crowd as he buckled the straps around the dolphin. She was so trusting that she made no objection, being quite confident that Johnny would do nothing to harm her. This was a strange new game, and she was willing to learn the rules.

The harness fitted over the front part of the dolphin's tapering body, being prevented from slipping back (so Johnny hoped) by the flippers and dorsal fin. He had been very careful to keep the straps clear of the single blowhole on the back of the head, through which the dolphin breathed when it surfaced — and which closed automatically when it dived.

Johnny attached the two nylon traces to the harness and gave them a good tug. Everything seemed to be staying in place, so he fastened the other ends to Mick's surfboard and climbed on top of it.

There was an ironic cheer from the crowd as Susie pulled him away from shore. She had needed no orders. With her usual swift grasp of the situation, she understood exactly what Johnny was trying to do.

He let her drag him out for a hundred yards, then pressed the LEFT button on the communicator. Susie responded at once. He tried RIGHT, and again she obeyed. The surfboard was already moving faster than he could have swum, yet the dolphin was barely exerting herself.

They were heading straight out to sea, when Johnny muttered, "I'll show them!" and signaled FAST. The board gave a little jump and started to fly across the waves as Susie went into top gear. Johnny slid back a little, so that the board

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planed properly, and did no nose down into the water. He felt very excited and proud of himself, and wondered how fast he was traveling. Flat out, Susie could do at least thirty miles an hour. Even with the drag of the board and the restriction of the harness, she was probably touching fifteen or twenty. And that was quite a speed, when you were lying flat on the water with the spray blowing in your face.

There was a sudden *snap*. The board jerked wildly to one side, and Johnny flew to the other. When he came to the surface, spluttering, he found that nothing had broken. Susie had just popped out of her harness like a cork out of a champagne bottle.

Well, one expected these little technical difficulties on the first trials. Though it was a long swim back to shore, where lots of people would be waiting to pull his leg, Johnny felt quite content. He had acquired a new mastery over the sea, that would allow him to roam the reef with far greater ease; and he had invented a new sport that would one day bring pleasure to thousands of men and dolphins alike.

Professor Kazan was delighted when he heard of Johnny's invention. It fell neatly into line with his own plans. Those plans were still rather vague, but they were beginning to take shape. In another few weeks he would be able to go to his Advisory Committee with some ideas that would really make it sit up.

The Professor was not one of those scientists — like some pure mathematicians — who are unhappy if their work turns out to be of practical value. Though he would be quite content to study the dolphin language for the rest of his life, without attemping to use his knowledge, he knew that the time had come to apply it. The dolphins themselves had forced his hand.

He still had little idea what could, or even what *should*, be done about the killer whale problem. But he knew very well that if the dolphins expected to get much help from mankind, they would have to prove that they could do something in return.

As far back as the 1960's, Dr. John Lilly, the first scientist to attempt communication with dolphins, had suggested ways in which they might cooperate with man. They could rescue survivors from shipwrecks — as they had demonstrated with Johnny — and they could help immeasurably in extending knowledge of the oceans. They must know of creatures never seen by man, and might even settle the still-unsolved mystery of the Great Sea Serpent. If they would help fishermen on a large scale, as they had done occasionally on a small one, they might play an important role in feeding the Earth's six billion hungry mouths.

All these ideas were worth investigating, and Professor Kazan had some new ones of his own. There was not a wreck in the world's oceans that dolphins could not locate and examine, down to

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their ultimate diving depth of at least a thousand feet. Even when a ship had been broken up centuries ago and covered with mud or coral, they could still spot it. They had a wonderfully developed sense of smell — or rather of taste — and could detect faint traces of metal, oil or wood in the water. Dolphin trackers, sniffing like bloodhounds across the sea-bed, might revolutionize marine archaeology. Professor Kazan sometimes wondered, a little wistfully, if they could be trained to follow the scent of gold...

When he was ready to test some of his theories, the *Flying Fish* sailed north, carrying Einar, Peggy, Susie and Sputnik in newly installed tanks. She also carried a good deal of special equipment. But she did not, to his bitter disappointment, carry Johnny. OSCAR had forbidden it.

"I'm sorry, Johnny," said the Professor, glumly examining the typed card that the computer had flicked at him. "You've A for Biology, A minus for Chemistry, B plus for Physics, and only B minus for English, Mathematics and History That really isn't good enough. How much time do you spend diving?"

"I didn't go out at all yesterday," Johnny answered evasively.

"Since it never stopped raining, I'm not surprised. I'm thinking of the *average* day."

"Oh, a couple of hours."

"Morning *and* afternoon, I'm quite sure. Well, OSCAR has worked out a new schedule for you, concentrating on your bad subjects. I'm afraid you'll slip back even further if you come cruising with us. We'll be gone two weeks, and you can't afford to lose any more time."

And that was that. It was no good arguing, even if he dared, for he knew that the Rrofessor was right. In some ways, a coral island was the worst place in the world to study...

It was a long two weeks before the *Flying Fish* came back, after making several stops at the mainland. She had gone as far north as Cooktown, where the great Captain Cook had landed in 1770 to repair his damaged *Endeavour*.

From time to time news of the expedition's progress came over the radio. But Johnny did not hear the full story until Mick reported to him on his return. The fact that Mick had gone on the voyage was a great help to Johnny's studies, for there was no one to lure him away from his tutors and teaching machines. He made remarkable progress in that two weeks. The Professor was very pleased.

The first souvenir of the trip that Mick showed Johnny was a cloudy-white stone, slightly egg-shaped, and the size of a small pea.

"What is it?" asked Johnny, unimpressed.

"Don't you know?" said Mick, "It's a pearl. And quite a good one."

Johnny still didn't think much of it, but had no desire to hurt Mick's feelings — or to show his ignorance.

"Where did you find it?" he asked.

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"I didn't. Peggy got it from eighty fathoms in the Marlin Deep. No diver's ever worked there. It's too dangerous, even with modern gear. But once Uncle Henry went down in shallow water and showed them what silver-lip oysters were like, Peggy and Susie and Einar did the rest. The Proff says it'll pay for this trip."

"What — this pearl?"

"No, stupid, the shell. It's still the best stuff for buttons and knife handles, and the oyster farms can't supply enough of it. The Proff believes one could run a nice little pearl shell industry with a few hundred trained dolphins."

"Did you find any wrecks?"

"About twenty, though most of them were already marked on the Admiralty charts. But the big experiment was with the fishing trawlers out of Gladstone. We managed to drive two schools of tuna right into their nets."

"I bet they were pleased."

"Well, not as much as you might think. They wouldn't believe the dolphins did it. They claimed it was done by their own electric control fields and sound-baits. We know better, and we'll prove it when we get some more dolphins trained. Then we'll be able to drive fish just where we like."

Suddenly Johnny remembered what Professor Kazan had said to him about dolphins, at their very first meeting: "They have more freedom than we can ever know on land. They don't belong to anyone, and I hope they never will."

Were they now about to lose that freedom, and would the Professor himself, for all his good intentions, be the instrument of its loss?

Only the future could tell. But perhaps dolphins had never been as free as men had imagined. For Johnny could not forget the story of that killer whale, with twenty of the People of the Sea in its stomach.

One had to pay for liberty, as for everything else. Perhaps the dolphins would be willing to trade with mankind, exchanging some of their freedom for security. That was a choice that many nations had had to make.

The bargain had not always been a good one.

Professor Kazan, of course had already thought of this and much more. He was not worried. He was still experimenting and collecting information. The decisions had yet to be made, the treaty between man and dolphin which he dimly envisaged was still far in the future. It might not even be signed in his lifetime — if, indeed, one could expect dolphins to sign a treaty. But why not? Their mouths were wonderfully dextrous, as they had shown when collecting and transporting those hundreds of silver-lip pearl shells. Teaching dolphins to write, or at least to draw, was another of the Professor's long-term projects.

One which would take even longer — perhaps centuries — was the History of the Sea. Professor Kazan had always suspected, and now he was certain, that dolphins had

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marvellous memories. There had been a time before the invention of writing when men had carried their own past in their brains. Minstrels and bards memorized millions of words and passed them on from generation to generation. The songs they sang, the legends of gods and heroes and great battles before the beginning of history, were a mixture of fact and imagination. But the facts were there, if one could dig them out — as, in the nineteenth century, Schliemann dug Troy out of its three thousand years of rubble, and proved that Homer spoke the truth.

The dolphins also had their storytellers, though the Professor had not yet contacted one. Einar had been able to repeat, in rough outline, some of their tales, which he had heard in his youth. Professor Kazan's translations had convinced him that these dolphin legends contained a wealth of information that could be found nowhere else. They went back earlier than any human myths or folk-tales, for some of them contained clear references to the Ice Ages — and the last of those was seventeen thousand years ago.

And there was one tale so extraordinary that Professor Kazan had not trusted his own interpretation of the tape. He had given it to Dr. Keith and asked him to make an independent analysis.

It had taken Keith, who was nothing like as good at translating, nearly a month to make some sense of the story. Even then, he was so reluctant to give his version that Professor Kazan practically had to drag it out of him.

"It's a very old legend," he began. "Einar repeats that several times. And it seems to have made a great impression on the dolphins, for they emphasize that nothing like it ever happened before or afterwards.

"As I understand it, there was a school of dolphins swimming at night off a large island, when it suddenly became like day and 'the sun came down from the sky.' I'm quite sure of *that* phrase. The 'sun' landed in the water and went out; at least, it became dark again. But there was an enormous object floating on the sea — as long as 128 dolphins. Am I right so far?"

Professor Kazan nodded.

"I agree with everything except the number. I made it 256, but that's not important. The thing was *big,* there's no doubt of that."

Dolphins, the Professor had discovered, counted on a scale of two. This was just what one might expect, for they had only two "fingers" or flippers to count with. Their words for 1, 10, 100 were like 2, 4, 8 in man's decimal notation. So to them, 128 and 256 were nice round numbers, signifying approximations, not exact measurements.

"The dolphins were frightened, and kept away from the thing," continued Dr. Keith. "As it lay in the water, it made strange noises. Einar imitates some of them. To me they sound like electric motors or compressors at work."

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Professor Kazan nodded his agreement, but did not interrupt.

"Then there was a tremendous explosion and the sea became boiling hot. Everyone within 1024, or even 2048, lengths of the object was killed. It sank quickly, and there were more explosions as it went down.

"Even the dolphins who escaped without injury died soon afterward of an unknown disease. For years, everyone kept away from the area, but as nothing else happened, some inquisitive dolphins went back to investigate. They found a 'place of many caves' resting on the sea-bed, and hunted inside it for fish. And then these later visitors died of the same strange disease, so now no one goes near the spot. I think the main purpose of the story is to act as a warning."

"A warning that's been repeated for thousands of years," agreed the Professor. "And a warning against *what?*"

Dr. Keith stirred uneasily in his chair. "I don't see any way out," he said. "If that legend is based on fact — and it's hard to see how the dolphins could have invented it — a spaceship landed somewhere a few thousand years ago. Then its nuclear engines blew up, poisoning the sea with radioactivity. It's a fantastic theory, but I can't think of a better explanation."

"Why is it fantastic?" asked Professor Kazan. "We're certain now that there's plenty of intelligent life in the universe, so we'd expect other races to build spaceships. In fact, it's been difficult to explain why they *haven't* come to Earth before now.

"Some scientists consider that we probably did have visitors in the past, but they came so many thousands of years ago that there's no evidence for it. Well, now we may have some evidence."

"What are you going to do about it?"

"There's nothing we can do at the moment. I've questioned Einar. He hasn't any idea where all this happened. We must get hold of one of those dolphin minstrels and record the complete saga. Let's hope that it gives more details. Once we know the approximate area we should be able to pin-point the wreck with geiger counters — even after ten thousand years. There's only one thing I'm afraid of."

"What's that?"

"The killer whales may have swallowed the information first. And then we'll never know the truth."

XVI

No visitor to the island had ever been welcomed with such mixed feelings. Everyone not out at sea was gathered around the pool when the big cargo-'copter came flying in from the South, all the way from the Tasmanian Whale Research Station.

It hovered high above the pool, the down-blast of its rotors tearing the surface of the water into fantastic, shifting patterns. Then the hatches in its belly opened and a large sling slowly descended. When

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it hit the pool, there was a sudden eruption, a great flurry of spray and foam — and the sling was empty.

But the pool was not. Cruising around it on a swift voyage of exploration was the largest and fiercest creature ever to visit Dolphin Island.

Yet at his first sight of the killer whale, Johnny was a little disappointed. It was smaller than he had expected, even though it was far bigger than any dolphin. He mentioned his disappointment to Mick, when the cargo-'copter had departed and it became possible to speak once again without shouting.

"It's a female," said Mick. "They're half the size of the males. Which means that they're much more practical to keep in captivity. She'll only eat a hundredweight of fish a day."

Despite his natural prejudice, Johnny had to admit that she was a handsome creature. Her piebald coloring — white beneath, black above, and with a large white patch behind each eye — gave her a most striking appearance. These patches were responsible for the nickname she soon acquired — Snowy.

Now she had finished inspecting the pool, and started to survey the land. She lifted her massive head out of the water, looked at the crowd with keen, intelligent eyes and lazily opened her mouth.

At the sight of those terrible peg-shaped teeth, there was a respectful murmur from the audience. Perhaps Snowy knew the impression she had created, for she yawned again, even more widely, giving a still better view of her formidable dentures. Dolphins have small, pin-like teeth, intended merely for grasping fish before they are swallowed whole. *These* teeth were designed to do the same job as a shark's. They could bite clean through a seal, a dolphin — or a man.

Now that the island had acquired a killer whale, everyone wanted to see what the Professor would do with her. For the first three days he left her alone, until she had got used to her new surroundings and recovered from the excitement of the trip. Since she had already been in captivity for several months, and was quite used to human beings, she quickly settled down and accepted both live and dead fish when it was given to her.

The task of feeding the whale was undertaken by Mick's family, usually by his father Jo Nauru or his uncle Stephen, skipper of the *Flying Fish*. Though they took on the job merely to earn some extra money, they soon became quite fond of their charge. She was intelligent, which everyone had expected. But she was also good-natured — which hardly seemed right for a killer whale. Mick grew particularly attached to her. She showed obvious pleasure when he came near the pool — and disappointment if he left without giving her anything.

When he was quite sure that Snowy had settled down and was taking a healthy interest in life, the Professor began his first tests. He

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played some simple phrases of Dolphin to her through the underwater hydrophones, and studied her reactions.

At first they were violent.

She charged around the pool in all directions, looking for the source of the noise. There was no doubt that she associated dolphin voices with food, and thought that dinner had been served.

It took her only a few minutes to realize that she had been fooled and that there weren't any dolphins in the pool. After that, she listened attentively to the sounds that were played to her, but refused to go chasing after them. Professor Kazan's hope that she would reply to some of the dolphin talk in her own language was not fulfilled. She remained stubbornly dumb.

Nevertheless, he was making a little progress in "Orcan," using tape-recordings of killer whale sounds. OSCAR, with his infallible computer memory, hunted through the mass of material looking for words that were already known to him. He found many. The names of several fish, for example, were almost the same in Orcan as in Dolphin. Probably both languages — like English and German, or French and Italian — sprang from some common ancient origin. Professor Kazan hoped so, for it would greatly simplify his work.

He was not too disappointed by Snowy's lack of cooperation. He had other plans for her, which could be carried out whether she cooperated or not. After she had been on the island for two weeks, a team of medical technicians arrived from India and began to install electronic equipment at the edge of the pool. When they were ready the water was drained. The indignant whale was stranded helplessly in the shallows.

The next step involved ten men, some strong ropes and a massive wooden framework that had been designed to hold the whale's head clamped in a fixed position. She was not at all pleased with this. Nor was Mick, who had to assist with the project by playing a hosepipe over Snowy to prevent her skin from drying in the sun.

"No one's going to hurt you, old girl," he said reassuringly. "It'll all be over in a minute, and you can start swimming around again."

Then, to Mick's alarm, one of the technicians approached Snowy with an object that looked like a cross between a hypodermic needle and an electric drill. With great care he selected a spot on the back of the whale's head, placed the device against it and pressed a button. There was a faint, high-pitched whine, and the needle sank deep into Snowy's brain, going through the thick bone of the skull as effortlessly as a hot knife through butter.

The operation upset Mick much more than it did Snowy, who seemed scarcely aware of the pinprick. This would not have surprised anyone with a knowledge of physiology, but Mick, like most people, did not know the curious fact that the brain has no sense of

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feeling. It can be cut or pierced without any discomfort to its owner.

Altogether ten probes were sunk into Snowy's brain. Wires were connected to them, and taken to a flat, streamlined box that was clamped to the top of the whale's head. The whole operation took less than an hour. When it was over the pool was flooded again and Snowy, puffing and blowing, started to swim lazily back and forth. She was obviously none the worse for her experience, though it seemed to Mick that she looked at him with the hurt expression of a person who had been let down by a trusted friend.

The next day Dr. Saha arrived from New Delhi. As a member of the Institute's Advisory Committee, he was an old friend of Professor Kazan's. He was also a world authority on that most complex of all organs, the human brain.

"The last time I used this equipment," said the physiologist, as he watched Snowy swimming back and forth in the pool, "it was on an elephant. Before I'd finished, I could control his trunk accurately enough to type with it."

"We don't need that sort of virtuosity here," Professor Kazan answered. "All I want to do is to control Snowy's movements, and to teach her not to eat dolphins."

"If my men have put the electrodes in the right area I think I can promise that. But not immediately. I'll have to do some brain-mapping first."

This "brain-mapping" was slow, delicate work, requiring great patience and skill. Saha sat for hours at his instrument panel, observing Snowy's behavior as she dived, basked in the sun, swam lazily round the pool or took the fish that Mick offered her. All the time her brain was broadcasting like a satellite in orbit, through the radio transmitter attached to it. The impulses picked up by the probes were recorded on tape, so that Dr. Saha could see the pattern of electrical activity corresponding to any particular action.

At last he was ready for the first step. Instead of receiving impulses from Snowy's brain, he began to feed electric currents *into* it.

The result was both fascinating and uncanny — more like magic than science. By turning a knob or closing a switch, Dr. Saha could make the great animal swim to right or left, describe circles or figure eights, float motionless in the center of the pool or carry out any other movement he wished. Johnny's efforts to control Sputnik and Susie with the communicator, which had once seemed so impressive, now appeared almost childish.

But Johnny did not mind. Susie and Sputnik were his friends, and he preferred to leave them freedom of choice. If they did not wish to obey him — as was often the case — that was their privilege. Snowy had no alternative. The electric currents fed into her brain had turned her into a living robot, with no will of her own, compelled to carry out orders.

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The more that Johnny thought about this, the more uncomfortable he became. Could the same control be applied to men? When he made inquiries he found that this had indeed been done, many times, in laboratory experiments. Here was a scientific tool that might be as dangerous as atomic energy, if used for evil instead of good.

There was no doubt that Professor Kazan intended to use it for good — at least, for the good of dolphins. But *how* he intended to use it still puzzled Johnny. He was not very much wiser even when the experiment moved into its next stage, with the arrival on the island of a most peculiar object — a life-sized mechanical dolphin, driven by electric motors.

It had been built twenty years ago by a scientist at the Naval Research Laboratories, who couldn't understand how dolphins managed to swim as fast as they did. According to his calculations, their muscles should not be able to drive them at much more than ten miles an hour. Yet they could cruise comfortably at twice that speed.

So the scientist had built a model dolphin and studied its behavior as it swam up and down, loaded with instruments. The project had been a failure — but the model was so beautifully made, and performed so well, that no one had the heart to destroy it even when its designer had given up in disgust. From time to time the Lab technicians dusted it off for public demonstrations. So the Professor had come to hear of it.

It would have fooled any human observer. But when it was lowered into Snowy's tank, before scores of fascinated spectators, the result was an utter anticlimax. The whale took one contemptuous glance at the mechanical toy and then ignored it completely.

"Just what I was afraid of," said the Professor, without too much disappointment. Like all scientists, he had long ago learned that most experiments are failures. He was not ashamed to make a fool of himself even in public. (After all, the great Darwin once spent hours playing the trumpet in a vegetable garden, to see if sound affected plant growth.) "She probably heard the electric motor and knew the thing was a fake. Well, there's no alternative. We'll have to use real dolphins as bait."

"Are you going to call for volunteers?" asked Dr. Saha jokingly.

The joke, however, backfired on him. Professor Kazan considered the suggestion carefully, then nodded his head in agreement.

"I'll do exactly that," he said.

XVII

"There's a general feeling round the island," said Mick, "that the Proff has gone stark staring mad."

"You know that's nonsense," retorted Johnny, springing to the defense of his hero. "What's he done now?"

"He's been using that brainwave gadget to control Snowy's feeding. He tells me to offer her one kind

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of fish, and then Dr. Saha stops her from eating it. After he's given her several jabs, she doesn't even try any more. He calls it 'conditioning'. Now there are four or five big jacks swimming round in the pool, but she won't look at them. She'll eat any other fish, though."

"Why does that make the Proff crazy?"

"Well, it's obvious what he's up to. If he can stop Snowy eating jacks, he can stop her eating dolphins. But what good will that be? There are millions of killer whales. He can't condition them all!"

"Whatever the Proff's doing," said Johnny stubbornly, "there's a good reason for it. Wait and see."

"All the same, I wish they'd stop bothering Snowy. I'm afraid it'll make her bad-tempered."

That was an odd thing to say about a killer whale, thought Johnny.

"I don't see that *that* matters very much," he said.

Mick grinned rather shamefacedly and scuffed the ground with his feet.

"You promise you won't tell anyone?" he asked.

"Of course."

"Well, I've been swimming with her a good deal. She's more fun than your little tadpoles."

Johnny stared at him in utter amazement, quite ignoring the insult to Susie and Sputnik.

"And you said the Professor was mad!" he exclaimed, when he had got his breath back. "You aren't pulling my leg again, are you?" he added suspiciously. By now he could usually spot one of Mick's jokes, but this time he seemed to be serious.

Mick shook his head.

"If you don't believe me, come down to the pool. Oh, I know it sounds crazy, but it's really quite safe. The whole thing started by accident. I got careless one day when I was feeding Snowy. I slipped on the edge of the pool and fell in."

"Phew!" whistled Johnny. "Bet you thought you'd had it!"

"I sure did. When I came up, I was looking straight into Snowy's mouth." He paused. "You know, it isn't true about recalling your past life at moments like this. All I thought about was those teeth. I wondered if I'd go down in one piece, or whether she'd bite me in two."

"And what happened?" asked Johnny breathlessly.

"Well, she *didn't* bite me in two. She just gave me a gentle nudge with her nose, as if to say 'Let's be friends.' And that's what we've been ever since. If I don't go swimming with her every day, she gets very upset. Sometimes it's not easy to manage. Because if anyone sees me they'll tell the Proff, and that'll be the end of it."

He laughed at Johnny's expression, which was a mixture of alarm and disapproval.

"It's a lot safer than lion-taming, and men have been doing that for years. I get quite a kick out of it, too. Maybe some day I'll work up to the big whales, like a hundred and fifty ton Blue."

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"Well, at least one of those couldn't swallow you," said Johnny, who had learned a good deal about whales since coming to the island. "Their throats are too small. They can only eat shrimps and little things like that."

"All right then. What about a Sperm whale — Moby Dick himself? *He* can swallow a thirty-foot squid in one gulp."

As Mick warmed to his theme, Johnny slowly realized that he was motivated by straightforward envy. Even now, the dolphins merely tolerated him. They never showed any of the affectionate delight they showered upon Johnny. He felt glad that Mick had at last found a cetacean friend, but wished it had been a more sensible one.

As it happened, he never had a chance of seeing Mick and Snowy swimming together, for Professor Kazan was ready for his next experiment. He had been working for days splicing tapes and composing long sentences in Dolphin. Even now he was not certain if he could convey the exact meaning he wanted to. Where his translation fell down, he hoped that the intelligence of the dolphins would bridge the gap.

He often wondered what they thought of his conversation, built up of words from many different sources. Each sentence he broadcast into the water must sound as if there were a dozen or more dolphins, each taking his turn to speak a few words in a different accent. It must be very puzzling to his listeners, since they could hardly imagine such things as tape recording and sound editing. The fact that they made any sense at all out of his noises was a tribute both to their intelligence and their patience.

As the *Flying Fish* pulled away from her moorings, Professor Kazan was unusually nervous.

"Do you know what I feel like?" he said to Dr. Keith as they stood on the foredeck together. "It's as if I'd invited my friends to a party, just to let loose a maneating tiger among them."

"It's not as bad as that," laughed Keith. "You've given them fair warning, and you do have the tiger under control."

"I *hope*," said the Professor.

Somewhere on board a loudspeaker announced: "They're opening the pool gate now. She doesn't seem in a hurry to leave."

Professor Kazan raised a pair of binoculars and stared back at the island.

"I don't want Saha to control her until we have to," he said. "Ah, here she comes."

Snowy was moving down the channel from the pool, swimming very slowly. When it came to an end and she found herself in open water, she seemed quite bewildered. She turned around several times as if finding her bearings. It was a typical reaction of an animal — or a man — that had spent a long time in captivity and had now been turned loose into the great outside world.

"Give her a call," said the Professor. The Dolphin "Come here!"

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signal went out through the water. Even if the phrase was not the same in Snowy's own language, it was one of those that she understood. She began to swim toward the *Flying Fish*, and kept up with the boat as it drew away from the island, heading out for the deeper water beyond the reef.

"I want plenty of room to maneuver," said Professor Kazan. "And I'm sure Einar, Peggy and Co., would prefer it that way — just in case they have to run."

"*If* they come. Perhaps they'll have more sense," Dr. Keith answered doubtfully.

"Well, we'll know in a few minutes. The broadcast has been going out all morning. Every dolphin for miles around must have heard it."

"Look!" said Keith suddenly, pointing to the west. Half a mile away, a small school of dolphins was swimming parallel to the ship's course. "There are your volunteers. It doesn't look as if they're in a hurry to come closer."

"This is where the fun begins," muttered the Professor. "Let's join Saha up on the bridge."

The radio equipment that sent out the signals to the box on Snowy's head, and received her brain impulses in return, had been set up near the wheel. This made the *Flying Fish's* little bridge very crowded, but direct contact between skipper Stephen Nauru and Dr. Saha was essential. Both men knew exactly what to do. Professor Kazan had no intention of interfering except in case of emergency.

"Snowy's spotted them," whispered Keith.

There was no doubt of that. Gone now was the uncertainty she had shown when first released. She began to move like a speedboat, leaving a foaming wake behind her as she headed straight for the dolphins.

Understandably, they scattered. With a guilty twinge, the Professor wondered just what they were thinking about him at this moment, if they were thinking of anything except Snowy.

She was only thirty feet from one sleek, plump dolphin when she shot into the air, landed with a crash in the water and lay there motionless, shaking her head in an almost human manner.

"Two volts, central punishment area," said Dr. Saha, taking his finger off the button. "Wonder if she'll try it again?"

The dolphins, doubtless surprised and impressed by the demonstration, had reformed a few hundred yards away. They too were motionless in the water, with their heads all turned watchfully towards their ancient enemy.

Snowy was getting over her shock, and beginning to move once more. This time she swam quite slowly, and did not head towards the dolphins at all. It was some time before they understood.

She was swimming in a wide circle, with the still motionless dolphins at its center. One had to look closely to see that the circle was slowly contracting.

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"Thinks she can fool us, does she?" said Professor Kazan admiringly. "I expect she'll get as close as she dares, pretending she's not interested, and then make a dash for it."

This was exactly what she did do. The fact that the dolphins stood their ground for so long was an impressive proof of their confidence in their human friends, and yet another demonstration of the amazing speed at which they learned. It was seldom necessary to tell a dolphin anything twice.

The tension grew as Snowy spiraled inwards, like an old-time phonograph pickup tracking in towards the spindle. She was only forty feet from the nearest and bravest dolphin when she made her bid.

A killer whale can accelerate at an unbelievable speed. But Dr. Saha was ready, his finger only a fraction of an inch from the button. Snowy didn't have a chance against him.

She was an intelligent animal — not quite as intelligent as her would-be victims, but almost in the same class. She knew that she was beaten. When she had recovered from the second shock, she turned her back on the dolphins and started to swim directly away from them. As she did so, Dr. Saha's finger darted towards his panel once more.

"Hey, what are you up to?" asked the *Flying Fish's* skipper, who had been watching all this with disapproval. Like his nephew Mick, he did not care to see Snowy pushed around. "Isn't she doing what you want?"

"I'm not punishing her. I'm rewarding her," explained Dr. Saha. "As long as I keep this button down, she's having a perfectly wonderful sensation."

"I think that's enough for one day," Professor Kazan said. "Send her back to the pool. She's earned her lunch."

"The same thing tomorrow, Professor?" asked the skipper, as *Flying Fish* headed for home.

"Yes, Steve. The same every day. But I'll be surprised if we have to keep it up for more than a week."

In fact, after only three days it was obvious that Snowy had learned her lesson. It was no longer necessary to punish her, only to reward her with short spells of electrical ecstasy. The dolphins lost their fears equally quickly, and at the end of a week, they and Snowy were completely at ease with each other. They would hunt around the reef together, sometimes cooperating to trap a school of fish, sometimes foraging independently. A few of the younger dolphins even started their usual horseplay around Snowy, who showed neither annoyance nor uncontrollable hunger when they bumped against her.

On the seventh day, Snowy was not steered back to her pool after her morning romp with the dolphins.

"We've done all we can," said the Professor. "I'm going to turn her loose."

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"Isn't that taking a risk?" objected Dr. Keith.

"Of course it is. But we've got to take it sooner or later. Unless we let her run wild again, we'll never know how well her conditioning lasts.

"And if she does make a snack of a few dolphins — what then?"

"The rest of them will tell us soon enough. Then we'll go out and round her up again. She'll be easy to locate with that radio pack she's carrying."

Stephen Nauru, who had been listening to the conversation as he stood at *Flying Fish's* wheel, looked back over his shoulder and asked the question that was worrying everybody.

"Even if you turned Snowy into a vegetarian, what about the other millions of the beasts?"

"We mustn't be impatient, Steve," answered the Professor. "I'm still only collecting information, and none of this may ever be the slightest use to man or dolphin. But I'm certain of one thing. The whole talkative dolphin world must know of this experiment by now, and they'll realize that we're doing our best for them. A good bargaining point for your fishermen."

"Hmm—I hadn't thought of that one."

"Anyway, if this works with Snowy, I've a theory that we need condition only a few killers in any one area. And only females. They'll teach their mates and their offspring that if you eat a dolphin, you'll get the most horrible headache."

Steve was not convinced. Had he realized the tremendous, irresistible power of electric brain stimulation, he might have been more impressed.

"I still don't think one vegetarian could make a tribe of cannibals mend their ways," he said.

"You may be quite right," answered the Professor. "That's what I want to find out. Even if the job's possible at all, it may not be worth doing. And even if it's worth doing, it may take several lifetimes. But one has to be an optimist. Don't you remember the history of the Twentieth Century?"

"Which bit of it?" asked Steve. "There was rather a lot."

"The only bit that really matters. Fifty years ago, a great many people refused to believe that all the *human* nations could live in peace. Well, we know that they were wrong. If they'd been right, you and I wouldn't be here. So don't be too pessimistic about this project."

Suddenly, Steve burst into laughter.

"Now what's so funny?" asked the Professor.

"I was just thinking," said Steve, "that it's thirty years since they had an excuse for awarding the Nobel Peace Prize. If this plan of yours comes off, you'll be in the running."

XVIII

While Professor Kazan experimented and dreamed, forces were gathering in the Pacific that cared nothing for the hopes

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and fears either of men or dolphins. Mick and Johnny were among the first to glimpse their power, one moonless night out on the reef.

As usual, they were hunting for crayfish and rare shells. This time Mick had acquired a new tool to help him. It was a watertight flashlight, somewhat larger than normal, and when Mick switched it on it produced a very faint blue glow.

But it also produced a powerful beam of ultraviolet light, invisible to the human eye. When this fell upon many varieties of corals and shells, they seemed to burst into fire, blazing with fluorescent blues and golds and greens in the darkness. The invisible beam was a magic wand, revealing objects that were otherwise hidden, and that could not be seen even by ordinary light. Where the sand had been disturbed by a burrowing mollusc, for example, the ultraviolet beam betrayed the tiny furrow — and Mick had another victim.

Underwater the effect was astonishing. When the boys dived in the coral pools near the edge of the reef, the dim blue light sliced ahead for fantastic distances. They could see corals fluorescing a dozen yards away, like stars or nebulae in the deeps of space. The natural luminosity of the sea, beautiful and striking though it was, could not compare with this.

Fascinated by their wonderful new toy, Mick and Johnny dived longer than they had intended. When they prepared to go home, they found that the weather had changed.

Until now, the night had been calm and still, the only sound the murmur of the waves, lazily rolling against the reef. But in the last hour a wind had come up, blowing in fitful gusts. The voice of the sea had acquired an angrier, more determined note.

Johnny saw the thing first, as he was climbing out of the pool. Beyond the reef, at a distance that was quite impossible to judge, a faint light was moving slowly across the waters. For a moment he wondered if it could be a ship. Then he realized that it was too blurred and formless, like a luminous fog.

"Mick," he whispered urgently, "what's *that*, out there at sea?"

Mick's answer was not reassuring. He gave a low whistle of astonishment, and moved to Johnny as if for protection.

Almost unable to believe their eyes, they watched as the mist gathered itself together, became brighter and more sharp-edged and climbed higher and higher in the sky. Within a few minutes it was no longer a faint glow in the darkness. It was a pillar of fire walking upon the face of the sea.

It filled them both with superstitious awe — with the fear of the unknown, which men will never lose, because the wonders of the universe are without end. Their minds were full of wild explanation, fantastic theories — and then Mick gave a relieved though rather shaken laugh.

"I know what that is," he said. "It's only a water-spout. I've seen them before, but never at night."

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Like many mysteries, the explanation was simple — once you knew it. But the wonder remained. The boys stared in fascination at the spinning column of water as it sucked up billions of the sea's luminous creatures and scattered them into the sky. It must have been many miles away, for Johnny could not hear the roar of its passage over the waves. Presently it vanished in the direction of the mainland.

When the boys had recovered from their astonishment, the incoming tide had risen to their knees.

"If we don't get a move on, we'll have to swim for it," said Mick. Then he added thoughtfully, as he splashed off towards the island. "I don't like the look of that thing. It's a sign of bad weather. Bet you ten to one we're in for a big blow."

How true that was, they began to realize by next morning. Even if one knew nothing about meteorology, the picture on the TV screen was terrifying. A great whirlpool of cloud, a thousand miles across, covered all the western Pacific. As seen from the weather satellite's cameras, looking down upon it from far out in space, it appeared to be quite motionless. But that was only because of its size. If one watched carefully, one could see after a few minutes that the spiral bands of cloud were sweeping swiftly across the face of the globe. The winds that drove them were moving at up to a hundred and fifty miles an hour; for this was the greatest hurricane to strike the Queensland coast in a generation.

On Dolphin Island, no one wandered very far from a TV screen. Every hour, revised forecasts came through from the computers that were predicting the progress of the storm, but there was little change during the day. Meteorology was now an exact science. The weathermen could state with confidence what was going to happen — though they could not, as yet, do much about it.

The island had known many other storms, and the prevailing mood was excitement and alertness, rather than alarm. Luckily, the tide would be out when the hurricane reached its peak, so there was no danger of waves sweeping over the island — as had happened elsewhere in the Pacific.

All through the day, Johnny was helping with the safety precautions. Nothing movable could be left in the open. Windows had to be boarded over, boats drawn up as far as possible on the beach. The *Flying Fish* was secured to four heavy anchors, and to make doubly certain that she did not move, ropes were taken from her to a group of pandanus trees on the island. Most of the fishermen, however, were not much worried about their boats, for the harbor was on the sheltered side of the island. The forest would break the full force of the gale.

The day was hot and oppressive, without a breath of wind. It scarcely needed the picture on the TV screen and the steady flow of weather reports from the east to tell that Nature was planning one of her big productions. Moreover,

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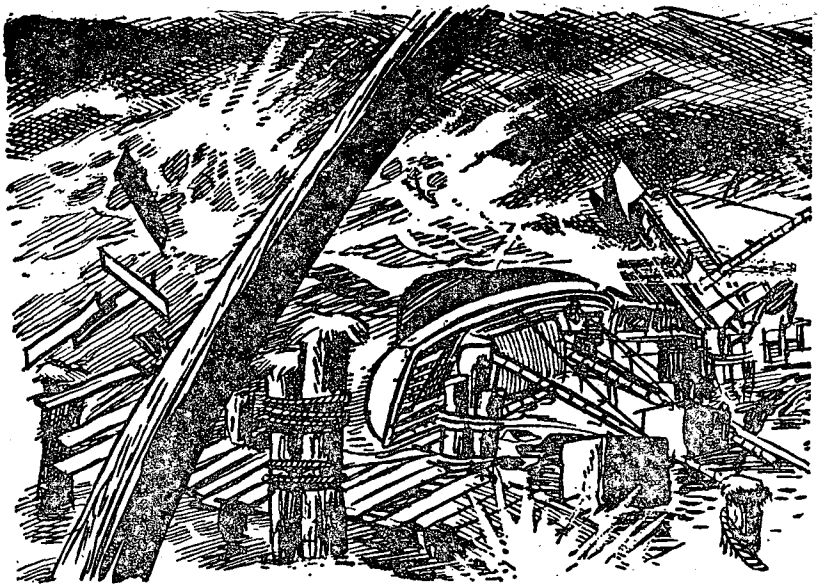

though the sky was clear and cloudless, the storm had sent its messages ahead of it. All day long, tremendous waves had been battering against the outer reef, until the whole island shook beneath their impact.

When darkness fell, the sky was still clear and the stars seemed abnormally brilliant. Johnny was standing outside the Naurus' concrete-and-aluminum bungalow, taking a last look at the sky before turning in, when he became aware of a new sound above the thunder of the waves. It was a sound such as he had never heard before, as of a monstrous animal moaning in pain. Even on that hot, sultry evening it seemed to chill his blood.

And then he saw something to the east that broke his nerve completely. An unbroken wall of utter blackness was rising up the sky, climbing visibly even as he watched. He had heard and seen the onset of the hurricane, and he did not wait for more.

"I was just coming to get you," said Mick, when Johnny closed the door thankfully behind him. Those were the last words that he heard for many hours.

Seconds later, the whole house gave a shudder. Then came a noise which, despite its incredible violence, was startlingly familiar. For a moment it took Johnny back to the very beginning of his adventures; he remembered the thunder of the *Santa Anna* jets, only a few feet beneath him, as he climbed aboard the hovership, half a world

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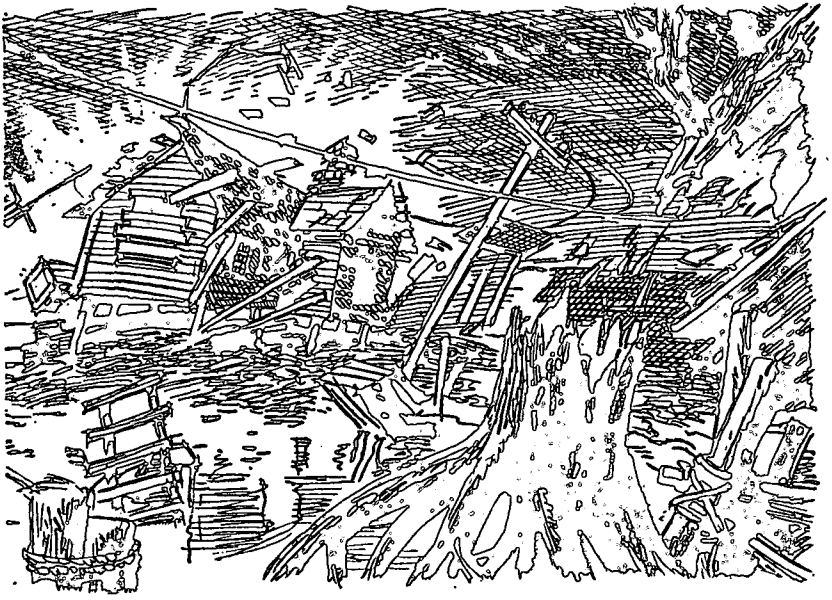

away and a seeming lifetime ago.

The roar of the hurricane had already made speech impossible. Yet now, unbelievably, the sound level became even higher, for such a deluge as Johnny had never imagined was descending upon the house. The feeble word "rain" could not begin to describe it. Judging by the sound that was coming through roof and walls, a man in the open would be drowned by the sheer mass of descending water — if he was not crushed first.

Yet Mick's family were taking all this quite calmly. The younger children were even gathered round the TV set, watching the pictures though they could not hear a word of the sound. Mrs. Nauru was placidly knitting — a rare accomplishment which she had learned in her youth, and which normally fascinated Johnny because he had never seen anyone doing it before. But now he was too disturbed to watch the intricate movement of the needles and the magical transformation of wool into sock or sweater.

He tried to guess, from the uproar around him, what was happening outside. Surely trees were being torn up by their roots, boats and even houses scattered by the gale! But the howl of the wind and the deafening, unending crash of water masked all other sounds. Guns might be booming outside the door, and no one would ever hear them.

Johnny looked at Mick for reassurance. He wanted some sign that everything was all right, that it would soon be over and every-

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thing would be normal. But Mick shrugged his shoulders, then made a pantomime of putting on a face-mask and breathing from an Aqualung mouthpiece, which Johnny did not think at all funny in the circumstances.

He wondered what was happening to the rest of the island. But somehow nothing seemed real except this one room and the people in it. It was as if they alone existed now, and the hurricane was launching its attack upon them personally. So might Noah and his family have waited for the flood to rise around them.

Johnny had never thought that a storm on land could frighten him; after all, it was "only" wind and rain. But the demonic fury raving around the frail fortress in which they huddled was beyond all his imagination. If he had been told that the whole island was about to be blown into the sea, he would have believed it.

Suddenly, even above the roar of the storm, there came the sound of a mighty crash — though whether it was close at hand, or far away, it was impossible to tell. At the same instant the lights went out.

The moment of utter darkness, at the height of the storm, was one of the most terrifying that Johnny had ever experienced. As long as he had been able to see his friends, even if he could not speak to them, he had felt reasonably safe. Now he was alone in the screaming night, helpless before natural forces that he had never known existed.

Luckily, the darkness lasted only for a few seconds. Mr. Nauru had been expecting the worst. He had an electric lantern ready and when its light came on, showing everything quite unchanged, Johnny felt ashamed of his fright.

Even in a hurricane, life continues. Now that they had lost the TV, the younger children started to play with their toys or read picture books. Mrs. Nauru continued placidly knitting, while her husband began to plough through a thick World Food Organization report on Australian fisheries, full of charts, statistics and maps. When Mick set up a game of checkers, Johnny did not feel much like challenging him, but he realized that it was the sensible thing to do.

So the night dragged on. Sometimes the hurricane slackened for a moment and the roar of the wind dropped to a level at which one could make oneself heard by shouting. But nobody made the effort. There was nothing to say; and very quickly the noise returned to its former volume.

Around midnight, Mrs. Nauru got up, disappeared into the kitchen and came back a few minutes later with a jug of hot coffee, half a dozen tin mugs and an assorted collection of cakes. Johnny wondered if this was the last snack he would ever eat. Nevertheless he enjoyed it, and then went on losing games to Mick.

Not until four in the morning, a bare two hours before dawn, did the fury of the storm begin to abate.

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Slowly its strength ebbed, until presently it was no more than an ordinary howling gale. At the same time they no longer seemed to be beneath a waterfall. Around five, there were a few isolated gusts, as violent as anything that had gone before; but they were the hurricane's dying spasms.

By the time the sun rose over the battered island, it was possible to venture out of doors.

Johnny had expected disaster. He was not disappointed. As he and Mick scrambled over the dozens of fallen trees that blocked once familiar paths, they met the other islanders wandering around, like the dazed inhabitants of a bombed city. Many of them were injured, with heads bandaged or arms in slings. But by good planning and good luck there had been no serious casualties.

The real damage was to property. All the power lines were down, but they could be quickly replaced. Much more serious was the fact that the electric generating plant was ruined. It had been wrecked by a tree that had not merely fallen, but walked end over end for a hundred yards and then smashed into the power building like a giant club. Even the standby Diesel plant had been involved in the catastrophe.

There was worse to come. Sometime during the night, defying all predictions, the wind had shifted round to the west and attacked the island from its normally sheltered side. Of the fishing fleet, half had been sunk, while the other half had been hurled up the beach and smashed into firewood. The *Flying Fish* lay on her side, partly submerged. She could be salvaged, but it would be weeks before she sailed again.

Yet despite all the ruin and havoc, no one seemed too depressed. At first Johnny was astonished by this; then he slowly came to understand the reason. Hurricanes were one of the basic, unavoidable facts of life on the Great Barrier Reef. Anyone who chose to make his home here must be prepared to pay the price. If he couldn't take it, he had a simple remedy; he could always move somewhere else.

Professor Kazan put it in a different way, when Johnny and Mick found him examining the blown-down fence around the dolphin pool.

"Perhaps this has put us back six months," he said. "But we'll get over it. Equipment can always be replaced — men and knowledge can't. And we've lost neither of those."

"What about OSCAR?" Mick asked.

"Dead — until we get power again, but all his memory circuits are intact."

That means no lessons for a while, thought Johnny. The ill wind had blown some good, after all.

But it had also blown more harm than anyone yet appreciated — except Nurse Tessie. That large and efficient woman was now looking, with utter dismay, at the soaking wreckage of her medical stores.

Cuts, bruises, even broken limbs

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she could deal with, as she had been doing ever since dawn. But anything more serious was now beyond her control. She did not even have an ampoule of penicillin that she could trust.

In the cold and miserable aftermath of the storm, she could count on several chills and fevers, and perhaps more serious complaints. Well, she had better waste no time radioing for fresh supplies.

Quickly, she made a list of the drugs which, she knew from earlier experience, she would be needing in the next few days. Then she hurried to the Message Center, and received a second shock.

Two disheartened electronics technicians were toasting their soldering irons on a Primus stove. Around them was a shambles of wires and broken instrument racks, impaled by the branch of a pandanus tree that had come straight through the roof.

"Sorry, Tess," they said. "If we can raise the mainland by the end of the week, it'll be a miracle. We're back to smoke signals, as of now."

Tessie thought that over.

"I can't take any chances," she said. "We'll have to send a boat across."

Both technicians laughed bitterly.

"Hadn't you *heard?*" said one. "*Flying Fish* is upside down, and all the other boats are in the middle of the island, parked in the trees."

As Tessie absorbed this slightly, but only slightly, exaggerated report, she felt more helpless than she had ever been since that time Matron had ticked her off as a raw probationer. She could only hope that everyone would keep healthy until communications were restored.

But by evening, she had attended to one injured foot that looked gangrenous; and then the Professor, pale and shaky, came to see her.

"Tessie," he said, "you'd better take my temperature. I think I've got fever."

Before midnight, she was sure that it was pneumonia.

XIX

The news that Professor Kazan was seriously ill, and that there was no way of treating him adequately, caused more dismay than all the damage wrought by the hurricane. And it hit no one harder than Johnny.

Though he had never stopped to think about it, the island had become the home he had never known, and the Professor a replacement for the father he could scarcely remember. Here he felt the security which he had longed for and unconsciously striven to find. Now that security was threatened. No one could get a message across a hundred miles of sea—in this age when moons and planets talked to one another.

Only a hundred miles! Why, he himself had traveled a greater distance, when he first came to the island. . .

And with that memory, he suddenly knew, beyond all doubt or argument, exactly what he had to do. Dolphins had brought him here.

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Now they could carry him the rest of the way.

He was sure that Susie and Sputnik, taking turns to pull the surfboard, could get him across that hundred miles of water in less than twelve hours. This would be the payoff for all the days they had spent together, hunting and exploring along the edge of the reef. With the two dolphins beside him, he felt absolutely safe in the sea. They knew all his wishes, even without the use of the communicator.

Johnny looked back at some of the trips they had made together. With Susie towing Mick's large board, and Sputnik towing Johnny on a smaller one, they had once crossed to the adjacent reef on Wreck Island, which was about ten miles away. The journey had taken just over an hour — and the dolphins had not been hurrying.

But how could he convince anyone that this was not a crazy, suicidal stunt? Only Mick would understand. The other islanders would certainly stop him, if they had any idea of what he was planning. Well, he would have to get away before they knew.

Mick's reaction was just what he had expected. He took the plan perfectly seriously, but was not at all happy about it.

"I'm sure it can be done," he said. "But you can't go by yourself."

Johnny shook his head.

"I've thought of that," he answered. For the first time in his life, he felt glad that he was small. "Remember those races we've had? How many have *you* won? You're too big—you'd only slow us down."

That was perfectly true, and Mick could not deny it. Even the more powerful Susie could not tow him as fast as Sputnik could tow Johnny.

Defeated on this point, Mick tried a new argument.

"It's over twenty-four hours since we've been cut off from the mainland. Before long, someone's bound to fly over to see what's happened, since they've had no word from us. You may risk your neck for nothing."

"That's true," admitted Johnny. "But whose neck is more important — mine or Professor Kazan's? If we keep on waiting, it may be too late. Besides, they'll be pretty busy on the mainland after that storm. It may be a week before they work round to us."

"Tell you what," said Mick. "We'll get organized, and if there's no sign of help, and the Professor's still bad by the time you're ready to go, then we'll talk it over again."

"You won't speak to anyone?" said Johnny anxiously.

"Of course not. By the way, where *are* Susie and Sputnik? Are you sure you can find them?"

"Yes. They were around the jetty earlier this morning, looking for us. They'll come quickly enough when I push the HELP! button."

Mick began to count items off on his fingers.

"You'll want a flask of water — one of those flat plastic ones — some concentrated food — a com-

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pass — your usual diving gear — I can't think of anything else. Oh, a flashlight. You won't be able to do the whole trip in the daytime."

"I was going to leave around midnight. Then I'll have the moon for the first half of the way, and will hit the coast during daylight."

"You seem to have worked it out pretty well," said Mick with grudging admiration. He still hoped that the attempt would be unnecessary, and that something would turn up. But if it did not, he would do all that he could to launch Johnny towards the distant mainland.

Because both boys, like everyone else on the island, had to help with urgent repair work, they could do little until nightfall. Even after darkness came, there were some jobs that continued by the soft light of kerosene lanterns, and it was not until very late in the evening that Johnny and Mick were able to complete their arrangements.

Luckily, no one saw them as they brought the little surfboard down to the harbor and launched it among the overturned and shattered boats. Equipment and harness were all attached. Only the dolphins were needed now — and the final, unavoidable reason for going.

Johnny handed the Communicator bracelet to Mick.

"See if you can call them," he said. "I'm running up to the hospital. I won't be more than ten minutes."

Mick took the bracelet, and waded out into deeper water. The fluorescent letters were clearly visible on the tiny keyboard, but he did not need them, for like Johnny he could use the instrument blindfold.

He sank down into the warm, liquid darkness and lay on the coral sand. For a moment he hesitated. If he wished, there was still time to stop Johnny. Suppose he did nothing with the Communicator, and then said that the dolphins had never turned up? The chances were that they wouldn't come, anyway.

No, he could not deceive his friend, even in a good cause, even to save him from risking his neck. He could only hope that when Johnny called at the hospital, he would hear that the Professor was now out of danger.

Wondering if he would be sorry for this all his life, Mick pressed the HELP! button, and heard the faint buzzing in the darkness. He waited fifteen seconds: then pressed it again — and again.

For his part, Johnny had no doubts. As he followed the beam of his flashlight up the beach, and along the path to the administrative center, he knew that he might be setting foot on Dolphin Island for the very last time. That, indeed, he might not live to see another sunrise. This was a burden which few boys of his age had had to bear, but he accepted it willingly. He did not think of himself as a hero. He was merely doing his plain duty. He had been happy here on the island, and had found a way of life that gave him everything he needed. If he wanted to preserve that way of life, he would now

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have to fight for it — and, if necessary, risk losing it.

The small hospital building, in which he himself had wakened as a sunburnt castaway a year ago, was completely silent. Curtains were drawn on all the windows except one, from which streamed the yellow light of a kerosene lamp. Johnny could not help glancing into the brightly illuminated room. It was the office, and Nurse Tessie was sitting at her desk. She was writing in a large register or diary, and she looked completely exhausted. Several times she put her hands to her eyes, and Johnny was shaken to realize that she had been crying. The knowledge that this huge, capable woman had been reduced to tears was proof enough that the situation was desperate. Perhaps, he thought with a sudden sinking of his heart, he was already too late.

It was not as bad as that, though it was bad enough. Nurse cheered up a little, putting on her professional face, when he knocked softly and entered the office. She would probably have thrown out anyone else who bothered her at this time of night, but she had always had a soft spot for Johnny.

"He's very ill," she said in a whisper. "With the right drugs, I could clear it up in a few hours. But as it is —" She shrugged her massive shoulders helplessly, then added, "It's not only the Professor: I've two who need anti-tetanus shots."

"If we don't get help," whispered Johnny, "do you think he'll pull through?"

She did not answer. Her silence was enough.

Johnny waited no longer. Luckily, she was too tired to notice that he did not say good night, but good-by.

When Johnny got back to the beach, he found that Susie was already harnessed to the surfboard, and Sputnik was waiting patiently beside her.

"They got here in five minutes," said Mick. "Gave me a fright too, when they came up in the darkness. I wasn't expecting them so soon."

Johnny stroked the two wetly gleaming bodies, and the dolphins rubbed affectionately against him. He wondered where and how they had ridden out the storm, for he could not imagine any creature surviving in the seas that must have raged around the island. There was a scar behind Sputnik's dorsal fin that had not been there before, but otherwise neither dolphin seemed any the worse for its experience.

Water-flask, compass, flashlight, sealed food container, flippers, facemask, snorkel, Communicator — Johnny checked them all. Then he said, "Thanks for everything, Mick. I'll be back soon."

"I still wish I could go with you," Mick answered huskily.

"There's nothing to worry about," said Johnny, though he no longer felt quite so sure. "Sputnik and Susie will look after me, won't you?" He could think of no more to say, so climbed on to the board, called, "Let's go," and waved to the disconsolate Mick as Susie pulled him out to sea.

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He had barely managed in time, for there were lanterns moving down the beach. As he slipped away into the night, he felt sorry that he had left Mick to face the music.

Perhaps from this very beach, a century and a half ago, Mary Watson had set off in her ill-fated bid for rescue, floating in that tiny iron box with her baby and dying servant. How strange it was that, in this age of spaceships and atomic energy and colonies on the planets, he should be doing almost the same thing, from the same island!

Yet perhaps it was not so strange after all. If he had never heard of her example, he might not have been inspired to repeat it.

And if he succeeded, she would not have died in vain, on that lonely reef forty miles to the north.

XX

Johnny was content to let the dolphins do all the navigating, until he was well clear of the reef. Their wonderful sonar system, filling the darkened sea with echoes beyond his hearing, told them exactly where they were. It revealed to them all the obstacles, and all the larger fish, for a hundred feet around. Millions of years before men invented radar, dolphins (as well as bats) had perfected it in almost every detail. True, they used sound waves and not radio waves, but the principle was the same.

The sea was choppy, but not too rough. Sometimes spray would break over him, and occasionally the board would nose down into a wave. But most of the time he skimmed comfortably across the surface. It was difficult to judge his speed in the darkness. When he switched on his flashlight the water seemed to be racing past him at a tremendous rate, but he knew that it could not be much more than ten miles an hour.

Johnny looked at his watch. Fifteen minutes had already passed, and when he glanced back there was no sign of the island. He had expected to see a few lights, but even these were gone. Already he was miles from land, racing through the night on a mission that would have terrified him only a year ago. Yet he was unafraid — or at least he could control his fears, for he knew that he was with friends who would protect him from harm.

It was time he set his course. Navigation was no problem. If he traveled even approximately west he was bound to hit the thousands of miles of Australian coastline sooner or later. When he glanced at his compass he saw, to his surprise, that there was no need to make any change of direction. Susie was already on course, heading due west.

It was the clearest and most direct proof of her intelligence that he had ever received. Mick's "Help!" signal had been enough. There was no need to point to the one direction in which help could be found. She already knew it, as the Queensland coastline.

But was she traveling as swiftly as she could? Johnny wondered

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whether to leave that to her, or whether to impress upon her the urgency of the mission. Finally he decided that it would do no harm to press the FAST button.

He felt the board jerk slightly when he did so, but could not tell if there had been any appreciable increase in speed. The hint should be sufficient. He was sure now that Susie knew exactly what she was doing, and was operating at her best cruising speed. If he insisted that she go faster, she would only tire herself.

The night was very dark, for the moon had not yet risen, and low clouds left behind by the storm hid almost all the stars. Even the usual phosphorescence of the sea was absent. Perhaps the luminous creatures of the deep were still recovering from the impact of the hurricane, and would not shine again until they had got over their shock. Johnny would have welcomed their gentle radiance, for there were moments when he felt scared by this headlong race through pitch-black darkness. Suppose a huge wave — or even a rock — was rearing invisibly ahead of him, as he skimmed along with his nose only three inches from the water? Despite his faith in Susie, these fears crept up on him from time to time, and he had to fight them down.

It was a wonderful moment when he saw the first pale glow of moonrise in the east. The clouds were still thick, but though he could not see the Moon itself, its reflected light began to grow around him. It was too faint to show any details, but merely to see the horizon made a great difference to his peace of mind. Now he could tell with his own eyes that there were no rocks or reefs ahead. Susie's underwater senses would be far keener than his straining vision, but at least he was no longer completely helpless.

Now that they were in deeper water, the annoying, choppy wavelets over which the board had bumped at the beginning of its journey had been left behind. Instead, they were skimming across long, rolling waves, hundreds of feet from crest to crest. It was hard to judge their height. From Johnny's prone position, they doubtless seemed much bigger than they really were. Half the time Susie would be climbing up a long, gentle slope. Then the board would hover for an instant on the summit of the moving hill of water; then there would be the swoop down into the valley, and the whole sequence would begin again. Johnny had long since learned to adjust himself to the climb and the swoop, shifting his weight automatically along the board. Like riding a bicycle, he did it without conscious thought.

Suddenly the Moon's waning crescent broke through the clouds. For the first time, Johnny could see the miles of rolling water around him, the great waves marching endlessly into the night. Their crests gleamed like silver in the moonlight, making their troughs all the blacker by the contrast. The

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surfboard's dive down into the dark valleys, and its slow climb to the peaks of the moving hills, was a continual switching from night to day, day to night.

Johnny looked at his watch. He had been travelling about four hours. That meant, with any luck, forty miles, and it also meant that dawn could not be far away. That would help him to fight off sleep. Twice he had dozed, fallen off the board and found himself spluttering in the sea. It was not a pleasant feeling, floating there in the darkness while he waited for Susie to circle back and pick him up.

Slowly the eastern sky lightened. As he looked back, waiting for the first sight of the sun, Johnny remembered the dawn he had watched from the wreckage of the *Santa Anna*. How helpless he had felt then, and how mercilessly the tropical sun had burned him! Now he was calm and confident, though he had reached the point of no return with fifty miles of sea separating him from land in either direction. And the sun could no longer harm him, for it had already tanned his skin a deep golden brown.

The swift sunrise shouldered away the night, and as he felt the warmth of the new day on his back, Johnny pressed the STOP button. It was time to give Susie a rest, and a chance to go hunting for her breakfast. He slipped off the surfboard, swam forward, loosened her harness — and away she went, jumping joyfully in the air as she was released. There was no sign of Sputnik. He was probably chasing fish somewhere else, but would come when he was called.

Johnny pushed up his facemask, which he had worn all night to keep the spray out of his eyes, and sat astride the gently rocking board. A banana, two meat rolls and a sip of orange juice was all he needed to satisfy him. The rest could wait until later in the day. Even if everything went well, he still had five or six hours of traveling ahead of him.

He let the dolphins have a fifteen-minute break while he relaxed on the board, rising and falling in the swell of the waves. Then he pressed the call button, and waited for them to return.

After five minutes, he began to get a little worried. In that time they could swim three miles. Surely they had not gone so far away? Then he relaxed as he saw a familiar dorsal fin cutting through the water towards him.

A second later, he sat up with a jerk. *That* fin was certainly familiar, but it was not the one he was expecting. It belonged to a killer whale.

Those few moments as Johnny saw sudden death bearing down at thirty knots seemed to last forever. Then a faintly reassuring thought struck him, and he dared to hope. The whale had almost certainly been attracted by his signal; could it possibly be—?

It was. As the huge head surfaced only a few feet away, he recognized the streamlined box of the control unit, still anchored securely in the massive skull.

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"You gave me quite a shock, Snowy," he said, when he had recovered his breath. "Please don't do that again."

Even now, he had no guarantee of safety. According to the last reports, Snowy was still on an exclusive diet of fish; at least, there had been no complaints from the dolphins. But he was not a dolphin. Nor was he Mick.

The board rocked violently as Snowy rubbed herself against it, and it was all that Johnny could do to stop himself from being thrown into the water. But it was a gentle rub — the gentlest that fifteen feet of killer whale could manage — and when she turned to repeat the maneuver on the other side, Johnny felt a good deal better. There was no doubt that she only wanted to be friendly, and he breathed a silent but fervent "thank you" to Mick.

Still a little shaken, Johnny reached out and patted her as she slid by, so silently and effortlessly. Her skin had the typical, rubbery dolphin feel — which, of course, was natural enough. It was easy to forget that this terror of the seas was just another dolphin, only on a slightly bigger scale.

She seemed to appreciate Johnny's rather nervous stroking of her flank, for she came back for more.

"I guess you must be lonely, all by yourself," said Johnny sympathetically. Then he froze in utter horror.

Snowy wasn't by herself and she had no need to be lonely. Her boy friend was making a leisurely approach; all thirty feet of him.

Only a male killer had that enormous dorsal fin, taller than a man. The huge black triangle, like the sail of a boat, came slowly up to the surfboard upon which Johnny was sitting, quite unable to move. All he could think was, *You've* had no conditioning—no friendly swimming with Mick.

This was far and away the largest animal that he had ever seen. It looked as big as a boat, and Snowy had suddenly shrunk to dolphin-size by contrast. But she was the master — or mistress — of the situation, for as her huge mate patrolled slowly round the board, she circled on an inner orbit, keeping always between him and Johnny.

Once he stopped, reared his head a good six feet out of the water, and stared straight at Johnny across Snowy's back. There was hunger, intelligence and ferocity in those eyes — or so it seemed to Johnny's heightened imagination — but no trace of friendliness. And all the time he was spiralling in towards the surfboard. In a very few minutes he would be squeezing Snowy against it.

Snowy, however, had other ideas. When her companion was only ten feet away, and filling the whole of Johnny's field of view, she suddenly turned on him and gave him a nudge amidships. Johnny could hear the "thump" clearly through the water. The impact would have been enough to stave in the side of a small boat.

The big whale took the gentle hint, and to Johnny's vast relief be-

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gan to move further outwards. Fifty feet away there was another slight disagreement, and another thump. That was the end of it. Within minutes, Snowy and her escort had vanished from sight, heading due north. As he watched them go, Johnny realized that he had just seen a ferocious monster converted into a hen-pecked husband, forbidden to take snacks between meals.

The snack concerned was devoutly grateful.

For a long time Johnny sat on the board, trying to regain control of his nerves. He had never been so scared in his life. He was not ashamed of it, for he had had plenty to be scared about. But at last he stopped looking over his shoulder every few seconds to see what was coming up from behind, and began to get organized. The first order of business was:—Where were Susie and Sputnik?

There had been no sign of them, and Johnny was not surprised. Undoubtedly, they had detected the killers, and had wisely kept their distance. Even if they had trusted Snowy, they would know better than to come near her mate.

Had they been scared completely away, or — horrible thought — had the killers already caught them? If they did not return, Johnny knew that he was finished, for he must still be at least forty miles from the Australian coast.

He was afraid to press the calling button a second time. It might bring back the killer whales — and he had no wish to go through *that* again, even if he could be sure that it would have the same happy ending. There was nothing he could do but sit and wait, scanning the sea around him for the first sign of a reasonably sized dorsal fin, not more than a foot high.

Fifteen endless minutes later, Sputnik and Susie came swimming up out of the south. That the killer whales had disappeared into the north was probably no coincidence. They had been waiting for the coast to clear. Johnny had never been so pleased to see any humans as he was to greet the two dolphins. As he slipped off the board to fix the harness, he gave them the little pats and caresses they enjoyed, and talked to them just as if they could understand him. As, indeed, they certainly did, for though they knew only a few words of English, they were very sensitive to his tone of voice. They could always tell when he was pleased or angry, and now they must surely share his own feeling of overwhelming relief.

He tightened the buckles of Sputnik's harness, checked that blowhole and flippers were clear of the straps, and climbed back onto the board. As soon as he was lying flat and properly balanced, Sputnik started to move.

This time, he did not continue westwards towards Australia. Instead, he headed south. "Hey!" said Johnny. "That's the wrong direction!" Then he thought of the killer whales, and realized that this was not such a bad idea after all. He would let Sputnik have his head.

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They were going faster than Johnny had ever travelled on the board before. Speed so close to the water was very deceptive, but he would not be surprised if they were doing fifteen knots. Sputnik kept it up for twenty minutes: then, as Johnny had hoped and expected, they turned west. With any luck now, it would be a clear run to Australia.

From time to time he glanced back to see if they were followed, but no tall dorsal fin broke the emptiness behind them. Once, a big manta ray leaped clear out of the sea a few hundred yards away, hung in the air for a second like an enormous black bat, then fell back with a crash that could have been heard for miles. It was the only sign of the ocean's teeming life that he saw on the second lap of his journey.

Towards mid-morning, Sputnik began to slacken, but continued to pull gamely. Johnny was anxious not to halt again until the coast was in sight. Then he intended to switch back to Susie, who would have had a good rest by that time. If his guesses of speed were correct, Australia could not be much more than ten miles away, and should be appearing at any moment.

He remembered how he had first glimpsed Dolphin Island, in circumstances which were so similar — yet so different. It had been like a small cloud on the horizon, trembling in the heat haze. What he was approaching now was no island, but a vast continent with a coastline thousands of miles long. Even the worst navigator could hardly miss such a target — and he had two of the best. He had not the slightest worry on this score, but he was getting a little impatient.

His first glimpse of the coast came when an unusually large roller lifted the surfboard. He glanced up, without thinking, when he was poised for a moment on the crest of the wave. And there, far ahead, was a line of white, stretching the full length of the horizon. . .

His breath caught in his throat, and he felt the blood pounding in his cheeks. Only an hour or two away was safety for himself, and help for the Professor. His long sleigh-ride across the ocean was nearly over.

Thirty minutes later, a bigger wave gave him a better view of the coast ahead. And then he knew that the sea had not yet finished playing with him; his worst ordeal had still to come.

XXI

The hurricane had passed two days ago, but the sea still remembered it. As the coast came nearer, until Johnny could make out individual trees and houses and the faint blue humps of the inland hills, he saw and heard the tremendous waves ahead. Their thunder filled the air. All along the coast, from north to south, white-capped mountains were moving against the land. The great waves were breaking a thousand feet out, as they hit the shelving beach. Like a man tripping

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and falling, they gained speed as they toppled, and when they finally crashed they left behind them smoking clouds of spray.

Johnny looked in vain for a break, somewhere along those moving, thundering walls of water. But as far as he could see — and when he stood up on the board, he could see for miles — the whole coastline was the same. He might waste hours hunting along it for sheltered bays or river-mouths where he could make a safe landfall. It would be best to go straight through, and to do it quickly before he lost his nerve.

He had with him the tool for the job, but he had never used it. The hard, flat coral so close to shore made surfriding impossible at Dolphin Island. There was no gentle underwater slope up which the breakers could come rolling into land. But Mick had often talked enthusiastically to him about the technique of "catching a wave," and it did not sound too difficult. You waited out where the waves were beginning to break, then paddled like mad when you saw one coming up behind you. Then all you had to do was to hang on to the board and pray that you wouldn't get dumped. The wave would do the rest.

Yes, it sounded simple enough — but could he manage it? He remembered that silly joke: "Can you play the violin?" "I don't know — I've never tried." Failure here could have much more serious consequences than a few sour notes.

Half a mile from land, he gave Susie the signal to halt and unbuckled her harness. Then, very reluctantly, he cut the traces away from the board. It would not do to have them whipping around him when he went barreling through the surf. He had put a lot of work into that harness and hated to throw it away. But he remembered Professor Kazan's remark. "Equipment can always be replaced." It was a source of danger now, and it would have to go.

The two dolphins still swam beside him as he paddled towards the shore, kicking the board along with his flippered feet, but there was nothing they could do to help him now. Johnny wondered if, superb swimmers though they were, they could even help themselves in the boiling maelstrom ahead. Dolphins were often stranded on beaches such as this, and he did not want Susie and Sputnik to run that sort of risk.

This looked a good place to go in. The breakers were running parallel to the beach without any confusing cross-patterns of reflected waves. And there were people here, watching the surf from the tops of some low sand-dunes. Perhaps they had seen him already. In any case, they would be able to help him to get ashore.

He stood up on the board and and waved vigorously — no easy feat, on such an unstable platform. Yes, they'd seen him. Those distant figures had suddenly become agitated, and several were pointing in his direction.

He was ready.

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Then Johnny noticed something that did not make him at all happy. Up there on the dunes were at least a dozen surfboards, some resting on trailers, some stuck upright in the sand. All those boards on land — and not a single one in the sea! Johnny knew, for Mick had told him often enough, that the Australians were the best swimmers and surfers in the world. There they were, waiting hopefully with all their gear: but they knew better than to try anything in *this* sea. It was not an encouraging sight for someone about to attempt his first shoot.

He paddled slowly forward, and the roaring ahead grew steadily louder. Until now the waves that swept past him had been smooth and unbroken, but now their crests were flecked with white. Only a hundred yards in front of him they would start to topple and fall thundering towards the beach, but here he was still in the safe no-man's-land between the breakers and the sea. Somewhere a fathom or two beneath him the advancing waves, that had marched unhindered across a thousand miles of the open Pacific, first felt the tug and drag of the land. After that, they had only seconds left to live before they crashed in tumultuous ruin upon the beach.

For a long time Johnny rose and fell at the outer edge of the white water, studying the behavior of the waves, noting where they began to break, feeling their power without yielding to it. Once or twice he almost launched himself forward, but instinct or caution held him back. He knew—his eyes and ears told him plainly enough — that once he was committed, there would be no second chance.

The people on the beach were becoming more and more excited. Some of them were waving him back, and this struck him as very stupid. Where did they *expect* him to go? Then he realized that they were trying to help. They were warning him against waves that he should not attempt to catch. Once, when he almost started paddling, the distant watchers waved him frantically onwards, but he lost his nerve at the last second. When he saw the wave that he had missed go creaming smoothly up the beach, he knew that he should have taken their advice. They were the experts. They understood this coast. Next time, he would do what they suggested.

He kept the board aimed accurately towards the land, while he looked back over his shoulder at the incoming waves. Here was one that was already beginning to break as it humped out of the sea; white-caps of foam had formed all along its crest. Johnny glanced quickly at the shore, and caught a glimpse of dancing figures wildly waving him onwards. This was it.

He forgot everything else as he dog-paddled with all his strength, urging the board up to the greatest speed that he could manage. It seemed to respond very sluggishly, so that he was barely crawling along the water. He dared not look back, but he knew that the wave

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was rising swiftly behind him, for he could hear its roar growing closer and louder every second.

Then it gripped the board, and his furious paddling became as useless as it was unnecessary. He was in the power of an irresistible force, so overwhelming that his puny efforts could neither help nor hinder it. He could only accept it.

His first sensation, when the wave had taken him, was one of surprising calm. The board felt almost as steady as if moving on rails. And though this was surely an illusion, it even seemed to have become quiet, as if he had left the noise and tumult behind. The only sound of which he was really conscious was the seething hiss of the foam as it boiled around him, frothing over his head so that he was completely blinded. He was like a bareback rider on a runaway horse, unable to see anything because its mane was streaming in his face.

The board had been well designed and Johnny had a good sense of balance. His instincts kept him poised on the wave. Automatically he moved backwards or forwards by fractions of an inch, to adjust his trim and to keep the board level; and presently he found that he could see again. The line of foam had retreated amidships. His head and shoulders were clear of the whistling, blinding spray, and only the wind was blowing in his face.

As well it might be, for he was surely moving at thirty or forty miles an hour. Not even Susie or Sputnik — not even Snowy — could match the speed at which he was travelling now. He was balanced on the crest of a wave so enormous that he would not have believed it possible. It made him giddy to look down into the trough beneath.

The beach was scarcely a hundred yards away, and the wave was beginning to curl over, only a few seconds before its final collapse. This, Johnny knew, was the moment of greatest danger. If the wave fell upon him now, it would pound him to pulp against the sea-bed.

Beneath him, he felt the board beginning to seesaw — to tilt nose down in that sickening plunge that would end everything. The wave he was riding was deadlier than any monster of the sea — and immeasurably more powerful. Unless he checked this forward lurch he would slide down the curving cliff of water, while the unsupported overhang of the wave grew larger and larger until at last it came crashing down upon him.

With infinite care he eased his weight back along the board. The nose slowly lifted. But he dared not move too far back, for he knew that if he did so he would slide off the shoulders of this wave and be left for the one behind to pulverize. He had to keep in exact, precarious balance, on the very peak of this mountain of foam and fury.

The mountain was beginning to sink beneath him, and he sank with it, still holding the board level, as it flattened into a hill. Then it was only a mound of moving foam, all its strength stolen from it by the

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braking action of the beach. Through the now aimless swirl of foam the board still darted forward, coasting like an arrow under its own momentum. Then there came a sudden jolt, a long snaky slither — and Johnny found himself looking, not at moving water, but at motionless sand.

At almost the same instant he was grabbed by firm hands and hoisted to his feet.

There were voices all round him, but he was still deafened by the roar of the sea and heard only a few scattered phrases like "Crazy young fool — lucky to be alive — not one of *our* kids."

"I'm all right," he muttered, shaking himself free.

Then he turned back, wondering if he could see any sign of Sputnik and Susie beyond the breakers. But he forgot all about them in that shattering moment of truth.

For the first time, as he stared at the mountainous waves storming and smoking towards him, he saw what he had ridden through. This was something that no man could hope to do twice. He was indeed lucky to be alive.

Then his legs turned to water as the reaction hit him; and he was thankful to sit down, clutching with both hands at the firm, welcoming Australian soil.

XXII

"You can go in now," said Nurse Tessie. "But only five minutes, remember. He's not very strong yet, and he hasn't quite got over his lost visitor." She winked.

Johnny knew all about that. Two days before, Mrs. Kazan had descended upon the island "like a troop of Cossacks," as someone had said with only slight exaggeration She had made a vigorous attempt to whisk the Professor back to Moscow for treatment, and it had taken all of Tessie's determination and the Professor's wiliness to frustrate her. Even then they might have been defeated, but luckily the doctor who flew over from the mainland every day had given strict orders that his patient must not be moved for at least a week. So Mrs. Kazan had left for Sydney, to see what Australia could offer in the way of culture—which was now a very great deal. She would be back, she promised, in exactly one week.

Johnny tiptoed into the sickroom. At first he could hardly see Professor Kazan, who was lying in bed entirely surrounded by books, quite unaware that he had company. It was at least a minute before the Professor noticed his visitor, hurriedly put down the book that he was reading and extended his hand in welcome.

"I'm so pleased to see you, Johnny. Thank you for everything. You took a very big risk."

Johnny made no attempt to deny it. The risk had been far greater than he had dreamed, when he had set out from Dolphin Island a week ago. Perhaps if he had known— but he had done it, and that was all that mattered.

"I'm glad I went," he answered simply.

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"So am I," said the Professor. "Nurse says the Red Cross 'copter was just in time."

There was a long, awkward silence. Then Professor Kazan went on, in a lighter tone.

"How did you like the Queenslanders?"

"Oh, they're wonderful people — though it was a long time before they'd believe I came from Dolphin Island."

"I'm not surprised," said the Professor dryly. "And what did you do while you were over there?"

"Well, I can't remember how many TV and radio broadcasts I had to make. I got rather fed up with them. But the best part was the surfriding. When the sea was calmer, they took me out and really showed me all the tricks. I'm now," he added with pride, "an Honorary Life Member of the Queensland Surf Club."

"That's fine," answered the Professor, a little absently. It was obvious to Johnny that he had something on his mind; and presently he brought it out.

"Now, Johnny," he said. "I've had time to do a lot of thinking these last few days, while I've been lying here. And I've come to a good many decisions."

That sounded faintly ominous, and Johnny wondered what was coming next.

"In particular," continued the Professor, "I've been worrying about your future. You're seventeen now, and it's time you looked ahead."

"You know that I want to stay here, Professor," said Johnny in some alarm. "All my friends are on the island."

"Yes, I know that. But there's the important matter of your education. OSCAR can only take you part of the way. If you want to do anything useful, you'll have to specialize and develop whatever talents you have. Don't you agree?"

"I suppose so," Johnny answered without enthusiasm. Where was all this leading? he wondered.

"What I'm suggesting," said the Professor, "is that we get you into the University of Queensland next semester. Don't look so upset. It's not the other side of the world. Brisbane's only an hour from here, and you can get back any weekend. But you can't spend *all* your life skindiving round the reef!"

Johnny decided that he would be quite willing to try, but in his heart he knew that the Professor was right.

"You have skills and enthusiasms we need badly," said Professor Kazan. "What you still lack is discipline and knowledge — and you'll get both at the University. Then you'll be able to play a big part in the plans I have for the future."

"What plans?" asked Johnny, a little more hopefully.

"I think you know most of them. They all add up to this — mutual aid between men and dolphins, to the advantage of both. In the last few months we've found some of the things we can do together, but that's only a feeble beginning. Fish-herding, pearl-diving, rescue operations, beach patrols, wreck surveys,

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water sports — oh, there are hundreds of ways that dolphins can help us! And there are much bigger things —"

For a moment, he was tempted to mention that sunken spaceship, lost back in the Stone Age. But he and Keith had decided to say nothing about that until they had more definite information. It was the Professor's ace in the hole, not to be played until the right moment. One day, when he felt that it was time to increase his budget, he was going to try that piece of dolphin mythology on the Space Administration, and wait for the dollars to roll in...

Johnny's voice interrupted his reverie.

"What about the killer whales, Professor?"

"That's a long-term problem, and there's no simple answer to it at the moment. Electrical conditioning is only one of the tools we'll have to use, when we've decided on the best policy. But I think I know the final solution."

He pointed to the low table at the other side of the room.

"Bring over that globe, please, Johnny."

Johnny carried across the 12" globe of the Earth, and the Professor spun it on its axis.

"Look here," he said. "I've been thinking about Reservations—Dolphins Only, Out of Bounds to killer whales. The Mediterranean and the Red Sea are the obvious places to start. It would take only about a hundred miles of fencing to seal them off from the oceans and to make them quite safe."

"Fencing?" asked Johnny incredulously.

The Professor was enjoying himself. Despite Nurse's warning, he looked quite capable of going on for hours.

"Oh, I don't mean wire netting or any solid barrier. But when we know enough Orcan to talk to killer whales, we can use underwater sound projectors to shepherd them around, and to keep them out of places where we don't want them to go. A few speakers in the Straits of Gibraltar, a few in the Gulf of Aden — that will make two seas safe for dolphins. And later, perhaps we can fence off the Pacific from the Atlantic, and give one ocean to the dolphins and the other to the killer whales... See, it's not far from Cape Horn to the Antarctic, the Bering Strait's easy, and only the gap south of Australia will be hard to close. The whaling industry's been talking about this sort of operation for years and, sooner or later it's going to be done."

He smiled at the rather dazed look on Johnny's face, and came back to earth.

"If you think that half my ideas are crazy, you're quite right. But we don't know *which* half, and that's what we've got to find out. Now do you understand why I want you to go to College? It's for my own selfish reasons, as well as your own good."

Before Johnny could do more than nod in reply, the door opened.

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"I said five minutes, and you've had ten," grumbled Nurse Tessie. "Out you go. And here's your milk, Professor."

Professor Kazan said something in Russian which conveyed, quite clearly, the impression that he didn't like milk. But he was already drinking it by the time that Johnny, in a very thoughtful mood, had left the room.

He walked down to the beach along the narrow path that wound through the forest. Most of the fallen trees had been cleared away, and already the hurricane seemed like a nightmare.

The tide was in, covering most of the reef with a sheet of water nowhere more than two or three feet deep. A gentle breeze was playing across it, producing the most curious and beautiful effects. In some areas the water was flat and oily, still as the surface of a mirror. But in others, it was corrugated into billions of tiny ripples, sparkling and twinkling like jewels as their ever-changing curves reflected the sunlight.

The reef was lovely and peaceful now. For the last year it had been his whole world. But wider worlds were beckoning; he must lift his eyes to further horizons.

He no longer felt depressed by the prospect of the years of study still ahead. That would be hard work, but it would also be a pleasure. There were so many things he wanted to learn about the sea.

And about its People, who were now his friends. END

★★★

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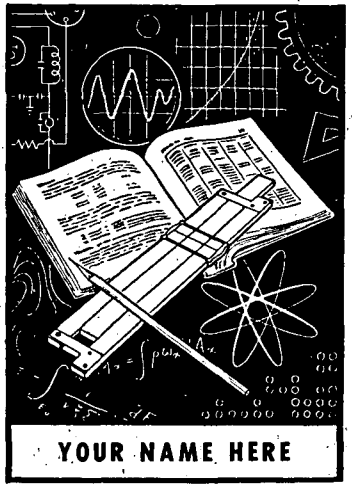

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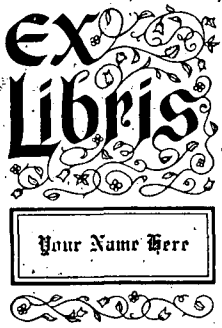

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